

R29

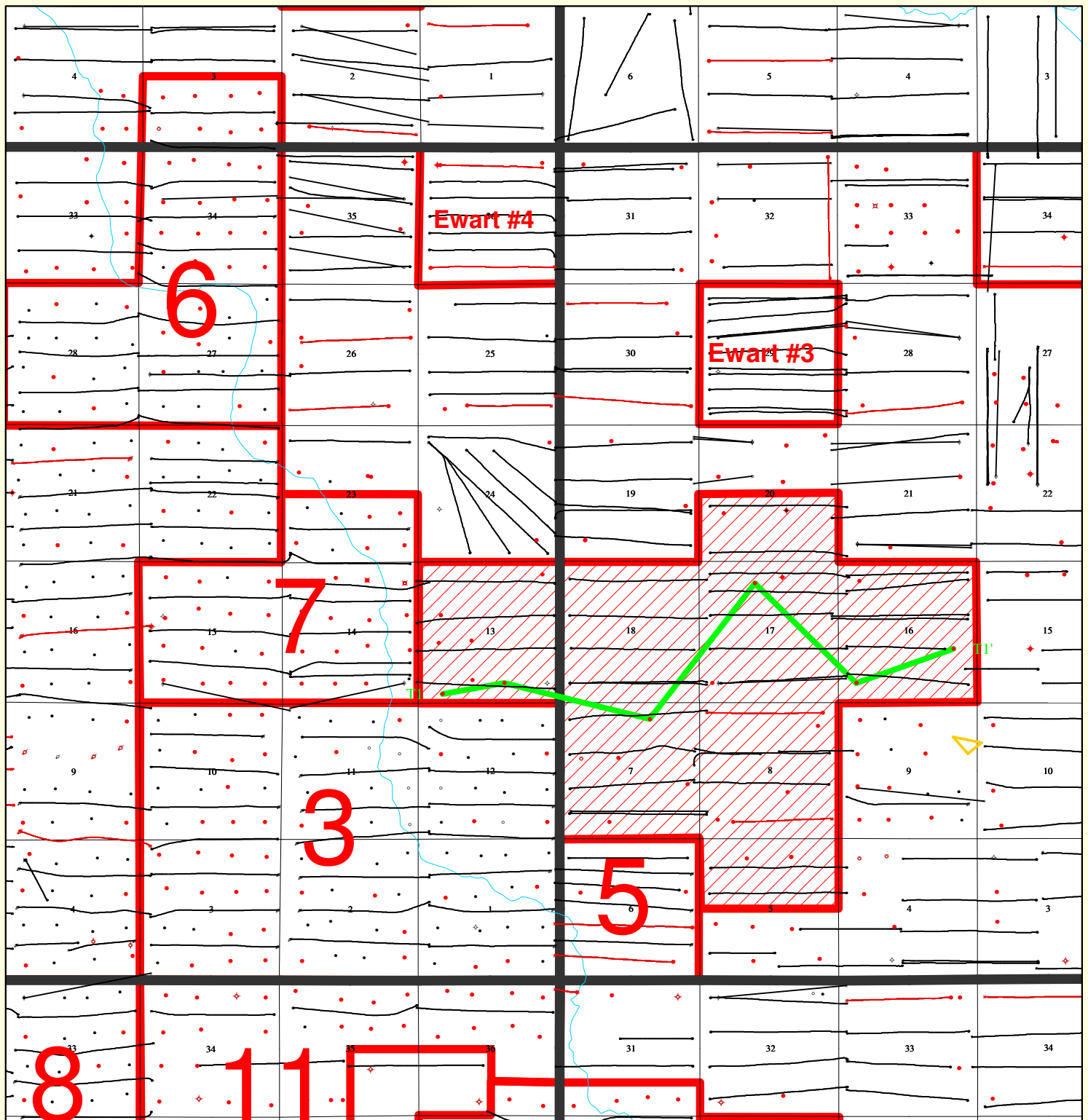
R28W1

T9

T9

T8

T8



R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
◇ Dry & Abandoned	◆ Abandoned Oil
⊗ Injection	
Surface Hole Locations:	
—○ Directional	— Horizontal

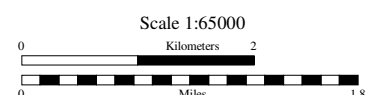
WELL LISTS	
*	All Wells
*	Open Hole Since 1980

Tundra

Appendix 2

Offsetting Units

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646</p> <p>Copyright © 1991-2013</p> <p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>Author: Neely Date: November 22, 2013 File: Sinclair Unit Offsetting Units Scale: 1 : 65000 Projection: Stereographic Center: N49.66538, W101.28357</p> <p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107</p>	
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R29

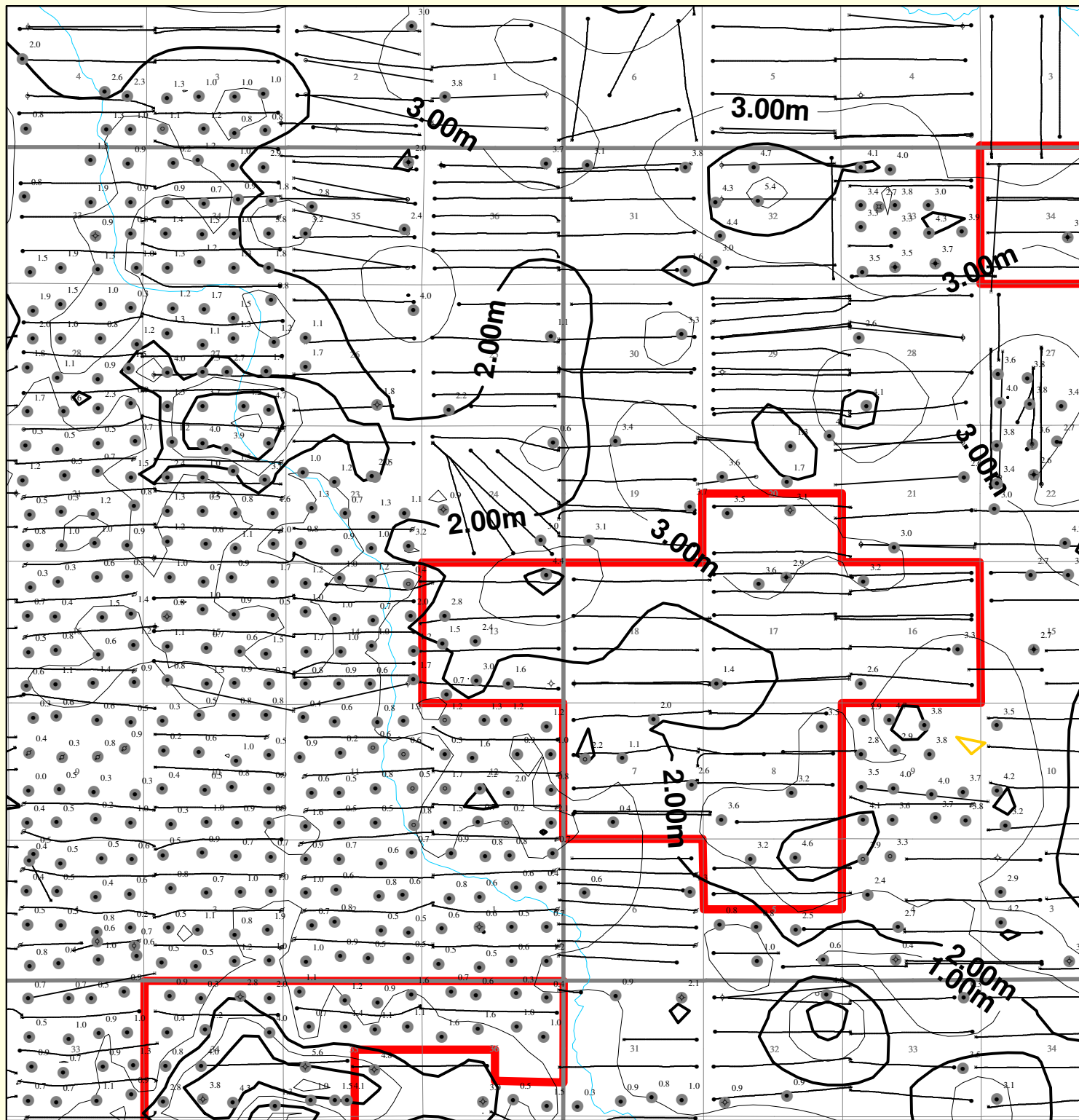
R28W1

T9

T9

T8

T8



R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
◇ Dry & Abandoned	◆ Abandoned Oil
⊕ Injection	
Surface Hole Locations:	
—○ Directional	— Horizontal
Well Postings:	
★ MBKKN to LYLE A(U)-Is	

WELL LISTS	
★	All Wells
●	Wells with MBKKN Picks

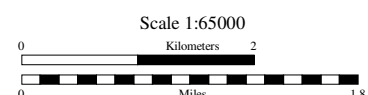
Tundra

Appendix 3

Middle Bakken Isopach

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646</p> <p>Copyright © 1991-2013</p> <p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>Author: Neely Date: November 22, 2013 File: Sinclair Unit MBKKN Isopach.MXD Scale: 1 : 65000 Projection: Stereographic Center: N49.66544 W101.28408</p> <p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107</p>
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s: (UBKKN Picks.wls) MBKKN to LYLE A(U)-
Contour interval = 1m



R29

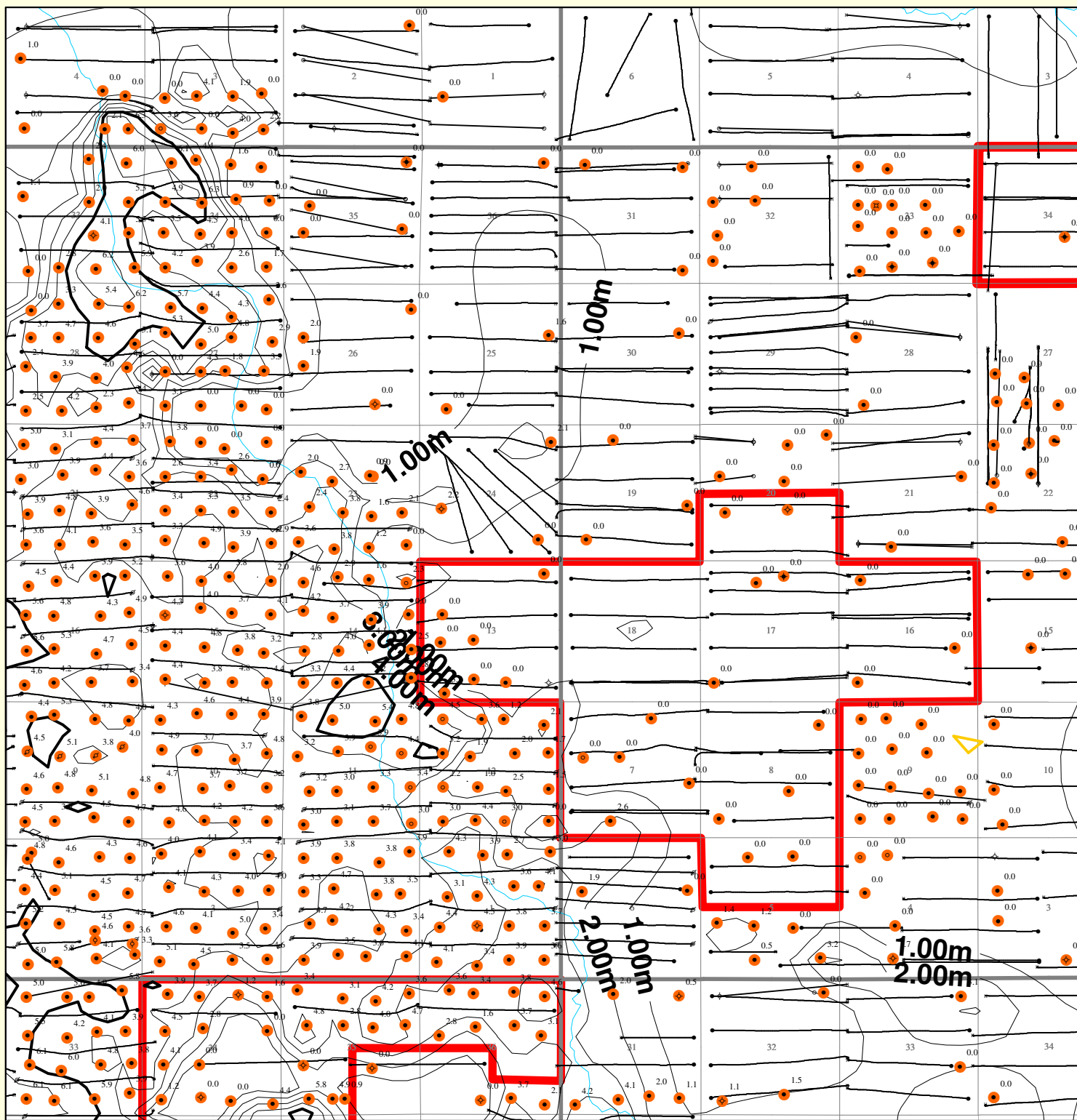
R28W1

T9

T9

T8

T8



R29

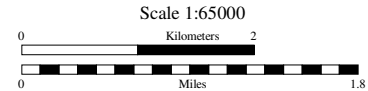
R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
☼ LYLE A to LYLE MKR(U)	

WELL LISTS	
* All Wells	
● Wells with Lyleton A Picks	

<h1>Tundra</h1>	
<h2>Appendix 4</h2>	
<h3>Lyleton Upper A Isopach</h3>	
Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 <small>Copyright © 1991-2013</small>	Author: Neely Date: November 22, 2013 File: Sinclair Unit Lyleton A Upper Scale: 1 : 65000 Projection: Stereographic Center: N49.66526 W101.28391
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107

(UBKKN Picks.wls) LYLE A to LYLE MKR(U)
Contour interval = 1m



R29

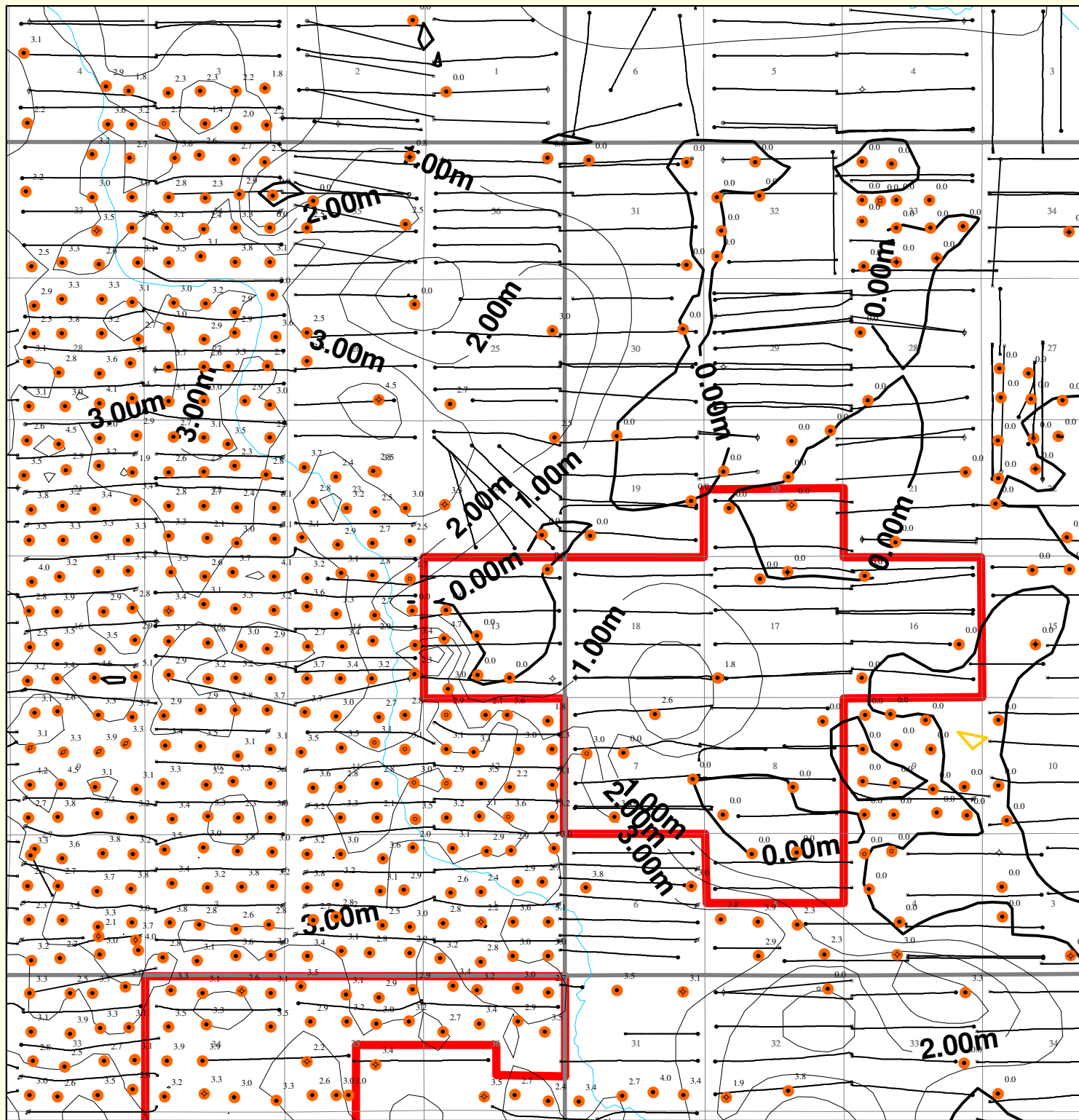
R28W1

T9

T9

T8

T8



R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
☼ LYLE MKR to RED SHA	

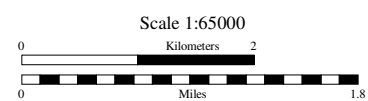
WELL LISTS	
* All Wells	
● Wells with Lyleton A Picks	

Tundra

Appendix 5

Lyleton Lower A Isopach

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646</p> <p><small>Copyright © 1991-2013</small></p> <p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>Author: Neely Date: November 22, 2013 File: Sinclair Unit Lyleton A Lower Scale: 1 : 65000 Projection: Stereographic Center: N49.66483 W101.28431</p> <p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107</p>
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R29

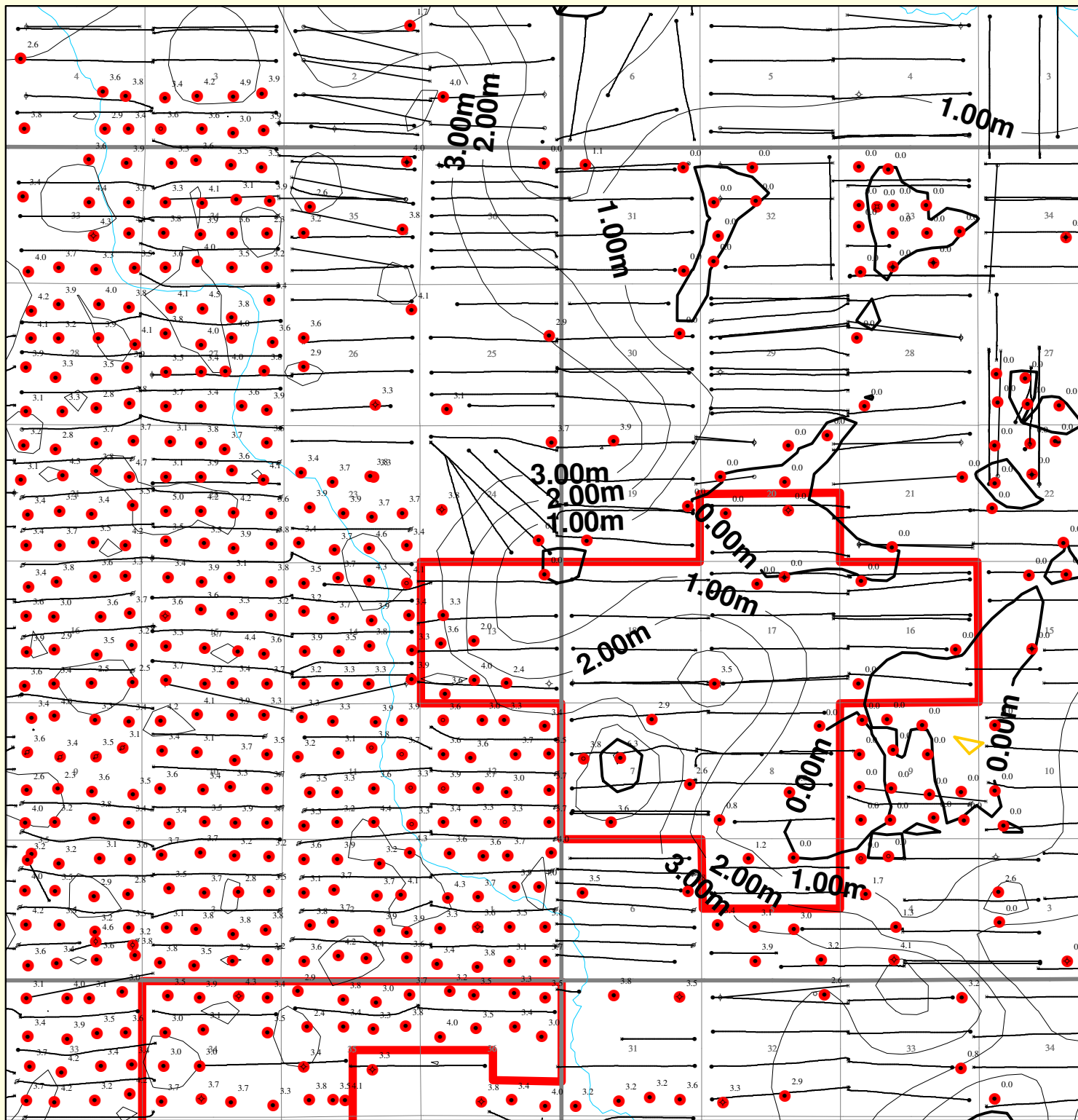
R28W1

T9

T9

T8

T8



R29

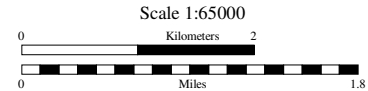
R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
* RED SHALE to LYLEB(U)	

WELL LISTS	
* All Wells	
● Wells with Red Shale Picks	

<h1>Tundra</h1>	
<h2>Appendix 6</h2> <h3>Red Shale Isopach</h3>	
Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 <small>Copyright © 1991-2013</small>	Author: Neely Date: November 22, 2013 File: Sinclair Unit Red Shale Isopach Scale: 1 : 65000 Projection: Stereographic Center: N49.66542 W101.28391 DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	

(UBKKN Picks.wls) RED SHALE to LYLEB(U)
Contour interval = 1m



R29

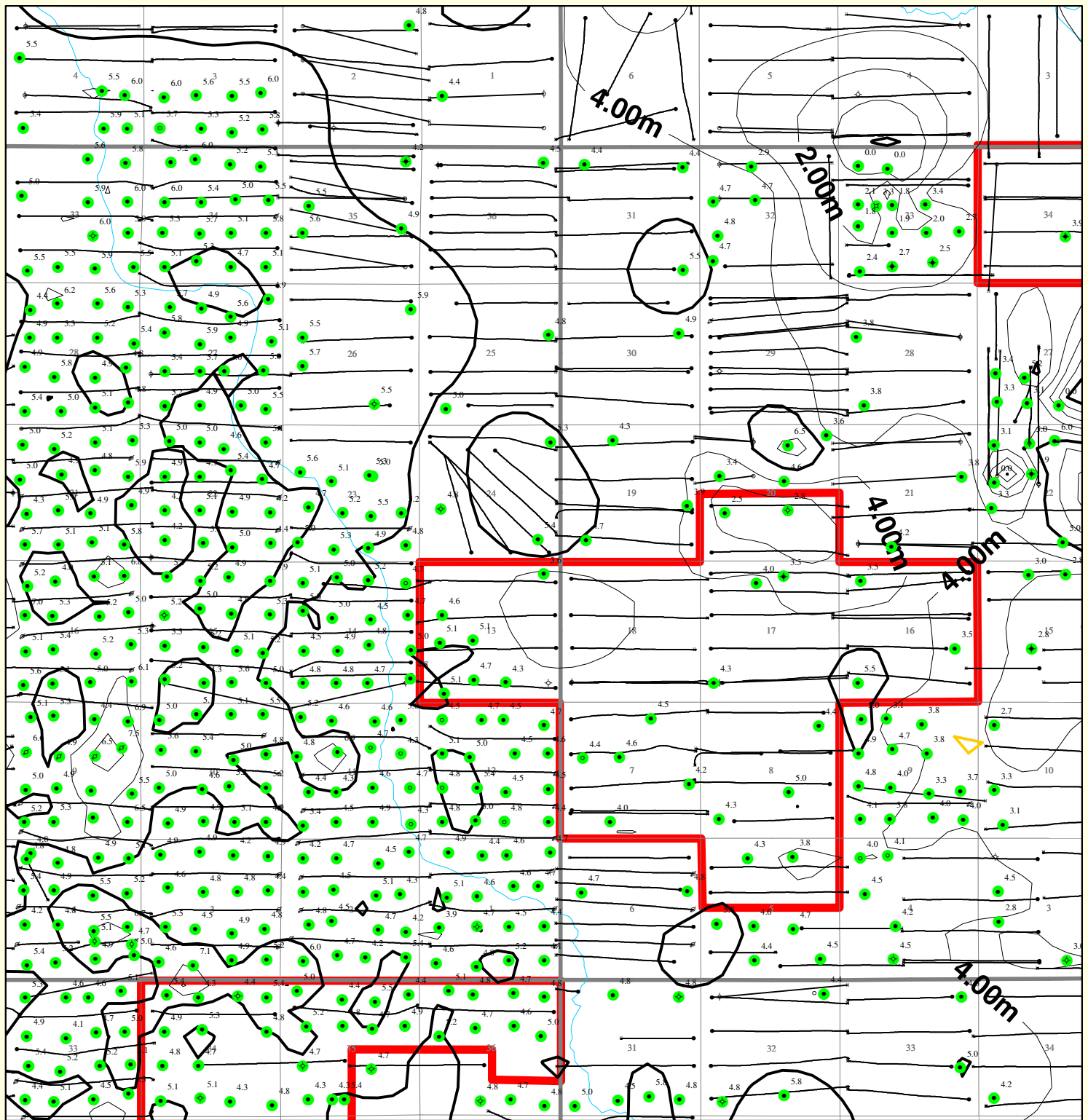
R28W1

T9

T9

T8

T8



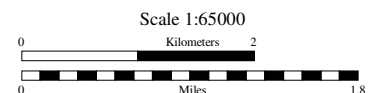
R29

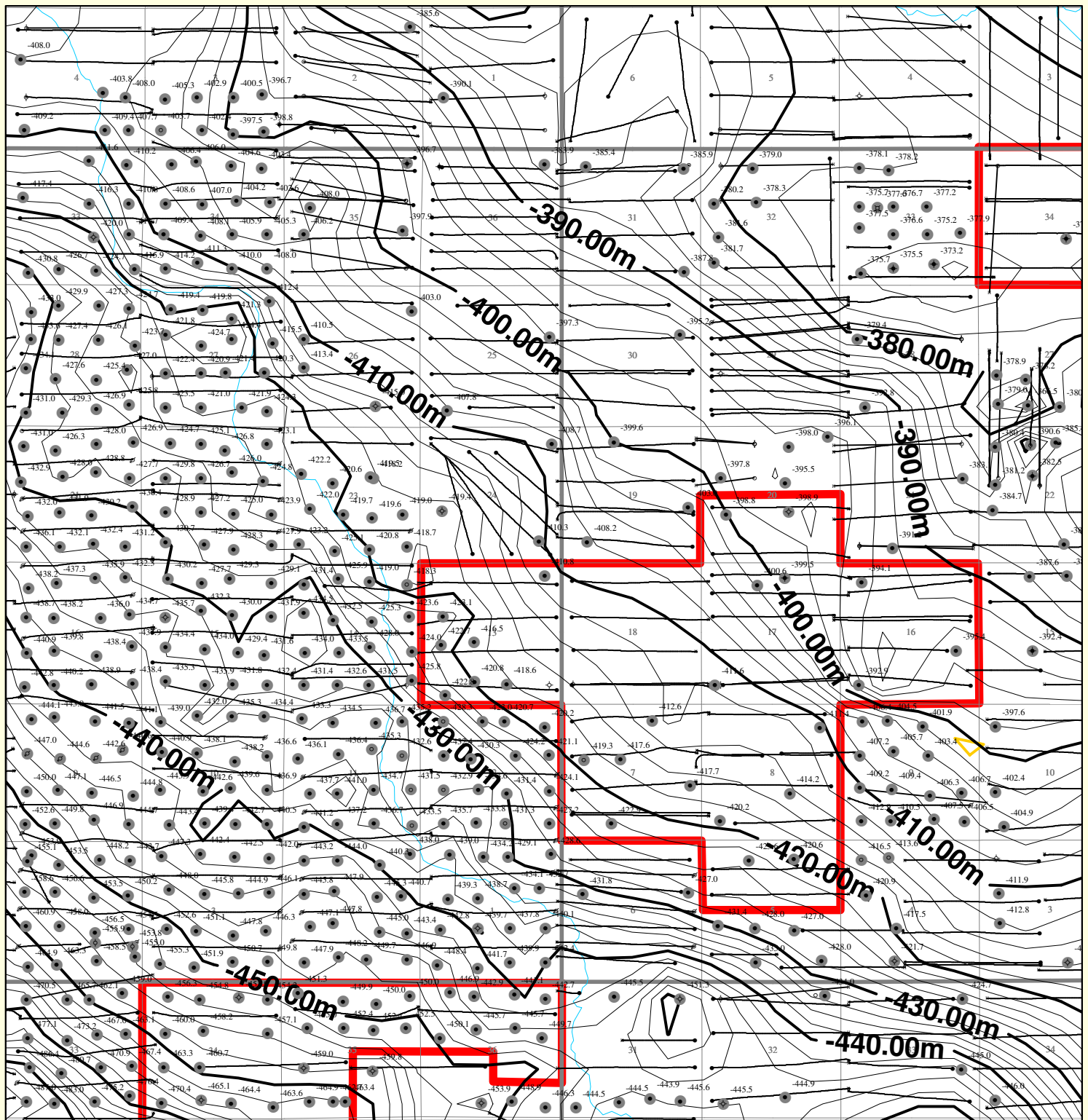
R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◊ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
☼ LYLEB to TORQ(U-IsC)	

WELL LISTS	
* All Wells	
● Wells with Lylton B Picks	

<h1>Tundra</h1>	
<h2>Appendix 7</h2> <h3>Lyleton B Isopach</h3>	
Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 <small>Copyright © 1991-2013</small>	Author: Neely Date: November 25, 2013 File: Sinclair Unit Lyleton B Isopach Scale: 1 : 65000 Projection: Stereographic Center: N49.66537 W101.28374
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107





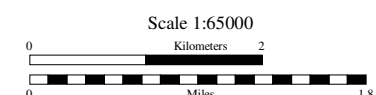
WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
—○ Directional	—□ Horizontal
Well Postings:	
* MBKKN(U-Sub) (m)	

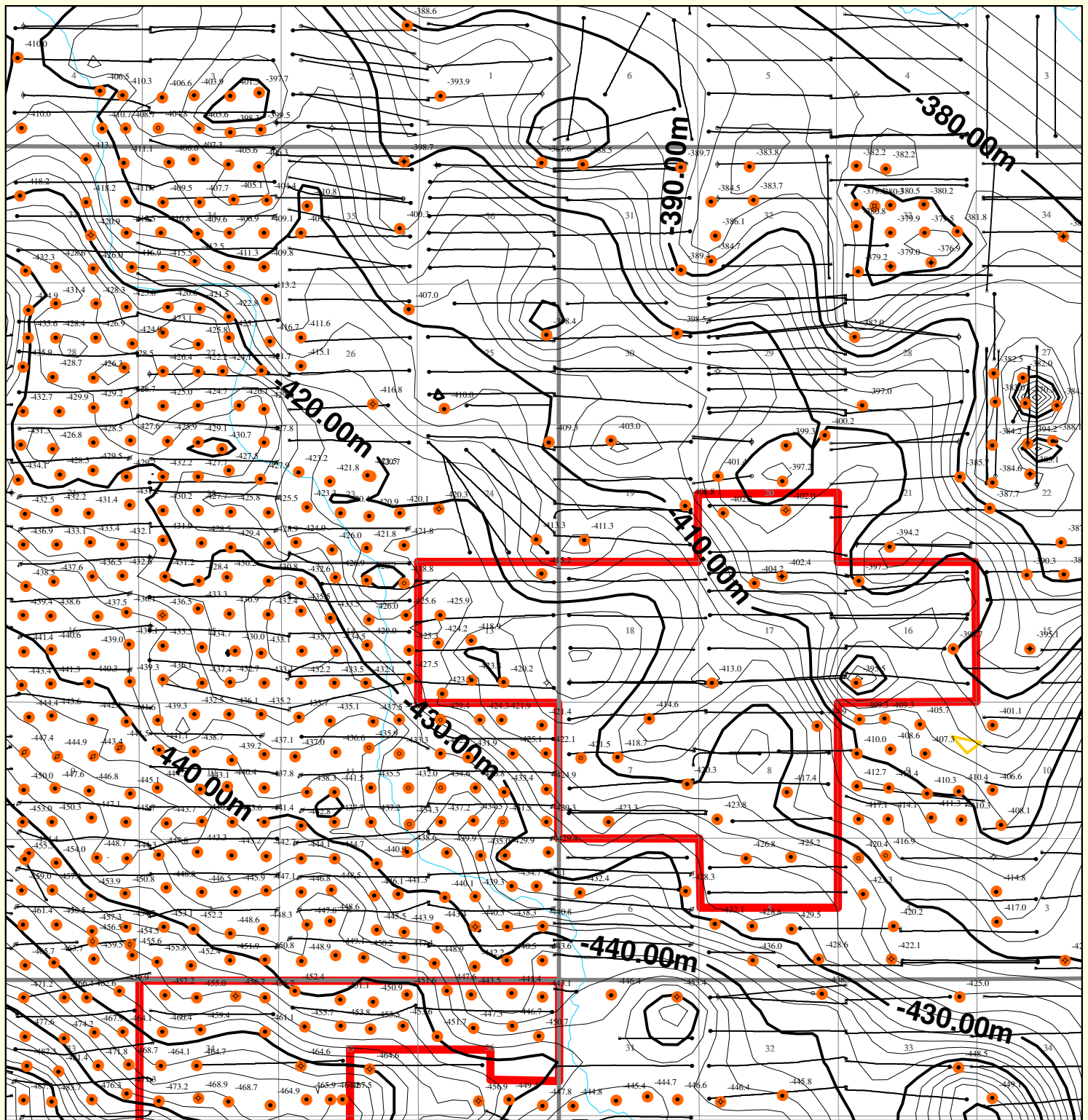
WELL LISTS	
* All Wells	
● Wells with MBKKN Picks	

Tundra

Appendix 8
Middle Bakken Structure

	Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 Copyright © 1991-2013	Author: Neely Date: November 25, 2013 File: Sinclair Unit MBKKN Structure. Scale: 1 : 65000 Projection: Stereographic Center: N49.66557 W101.28391
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107	





WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
	★ LYLE A(U-Sub) (m)

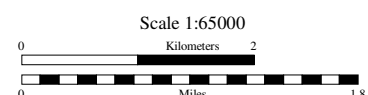
WELL LISTS	
*	All Wells
●	Wells with Lyleton A Picks

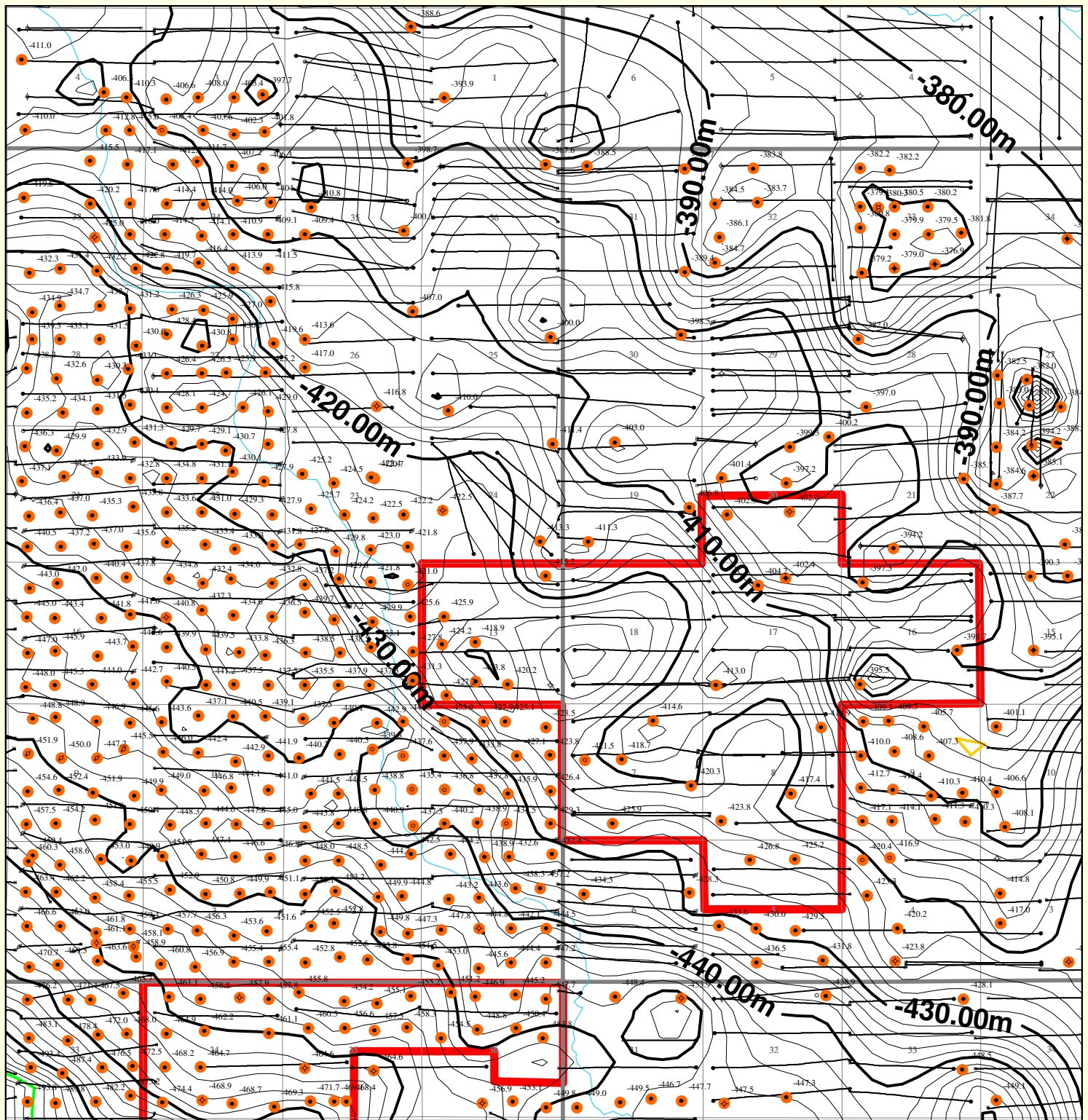
Tundra

Appendix 9

Upper Lyleton A Structure

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646</p> <p>Copyright © 1991-2013</p> <p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>Author: Neely Date: November 25, 2013 File: Sinclair Unit Lyleton A Upper Scale: 1 : 65000 Projection: Stereographic Center: N49.66537 W101.28345</p> <p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107</p>
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WELL LEGEND	
Bottom Hole Locations:	
○ Location	◊ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
☼ LYLE MKR(U-Sub) (m)	

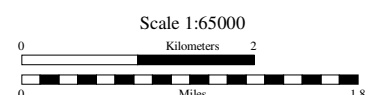
WELL LISTS	
* All Wells	
● Wells with Lyleton A Picks	

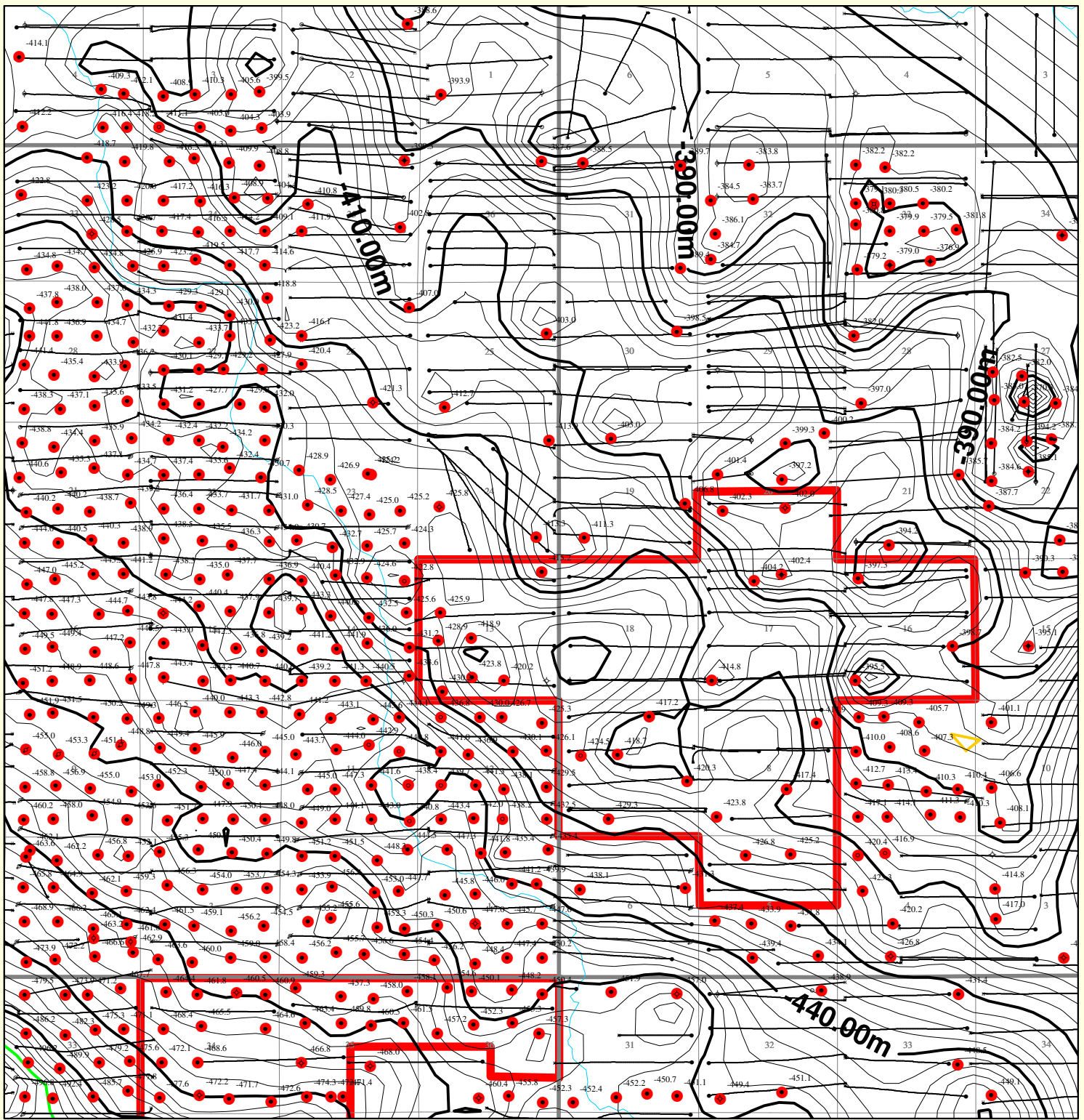
Tundra

Appendix 10

Lyleton Lower A Structure

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 Copyright © 1991-2013</p>	<p>Author: Neely Date: November 25, 2013 File: Sinclair Unit Lyleton A Lower Scale: 1 : 65000 Projection: Stereographic Center: N49.66556° W101.28408</p>
<p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107</p>





WELL LEGEND	
Bottom Hole Locations:	
○ Location	◊ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
—○ Directional	—□ Horizontal
Well Postings:	
★ RED SHALE(U-Sub) (m)	

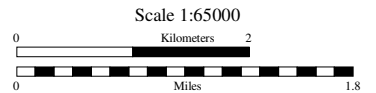
WELL LISTS	
* All Wells	
● Wells with Red Shale Picks	

Tundra

Appendix 11

Red Shale Structure

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646</p> <p>Copyright © 1991-2013</p> <p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>Author: Neely Date: November 25, 2013 File: Sinclair Unit Red Shale Struct Scale: 1 : 65000 Projection: Stereographic Center: N49.66526 W101.28390</p> <p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107</p>	
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R29

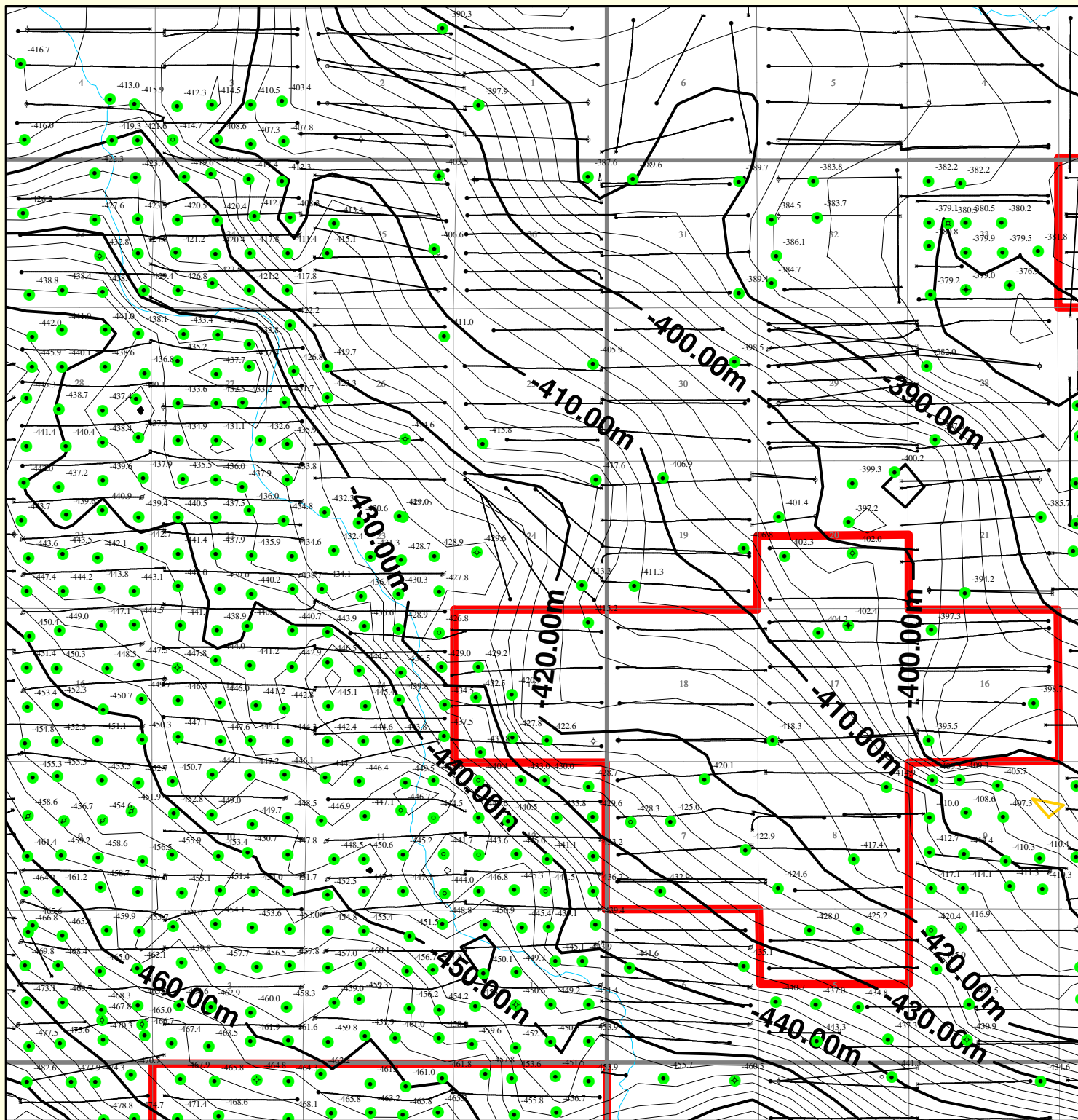
R28W1

T9

T9

T8

T8



R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
* LYLEB(U-Sub) (m)	
⊛	

WELL LISTS	
* All Wells	
● Wells with Lyton B Picks	

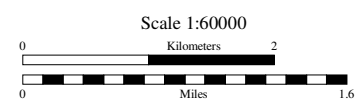
Tundra

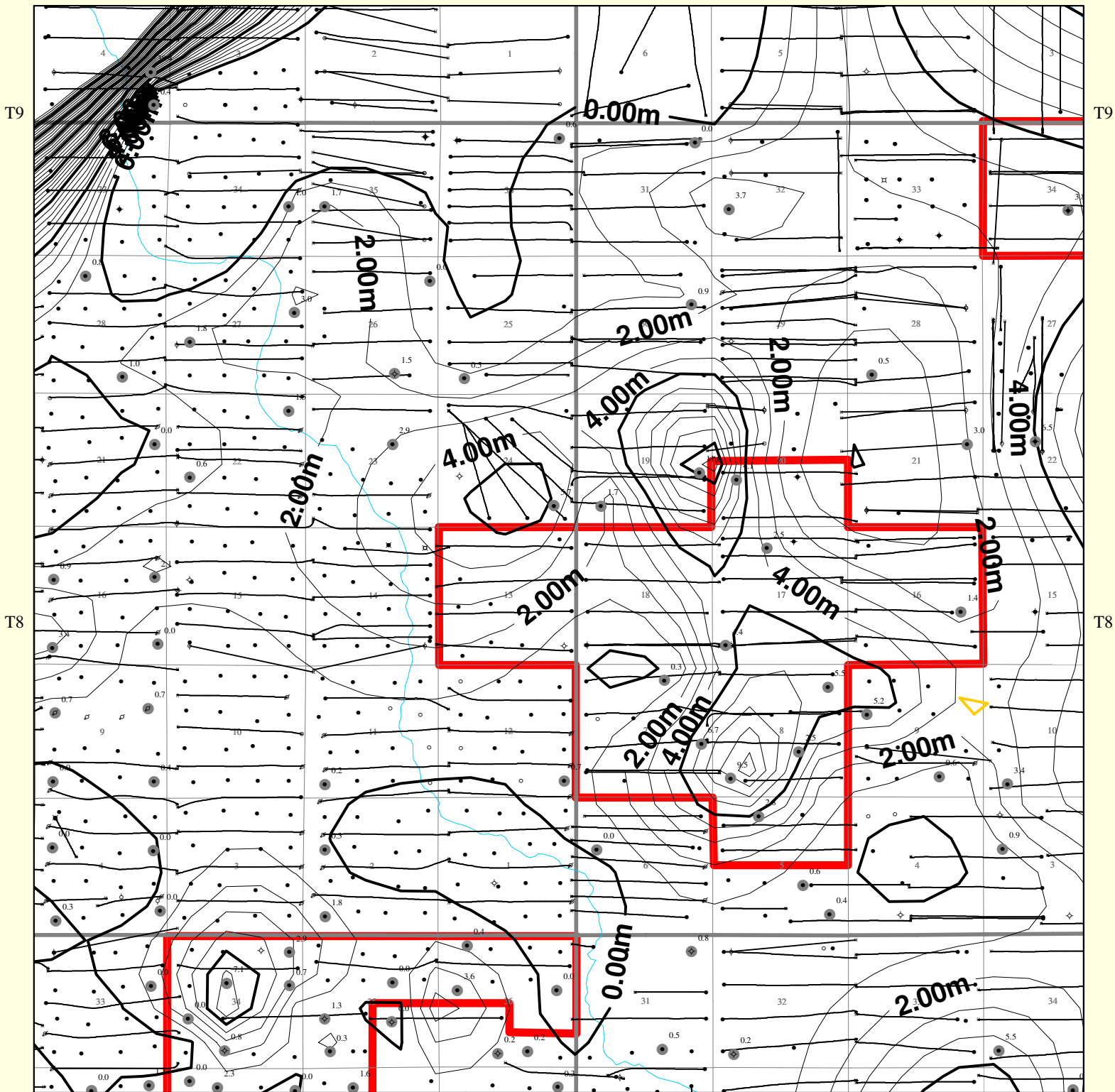
Appendix 12

Lyleton B Structure

Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 12, Dec. 9 2013 (403) 770-4646 <small>Copyright © 1991-2013</small>	Author: Neely Date: January 8, 2014 File: Sinclair Unit Lyleton B Struct Scale: 1 : 60000 Projection: Stereographic Center: N49.67006 W101.29053 DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	

Contours: (UBKKN Picks.wls) LYLEB(U-Sub) (m)
 Contour interval = 2m





WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
* MBKKN k-h .5md(U-TV)	

WELL LISTS
* All Wells
● MBKKN Core Data

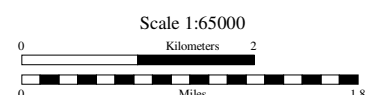
Tundra

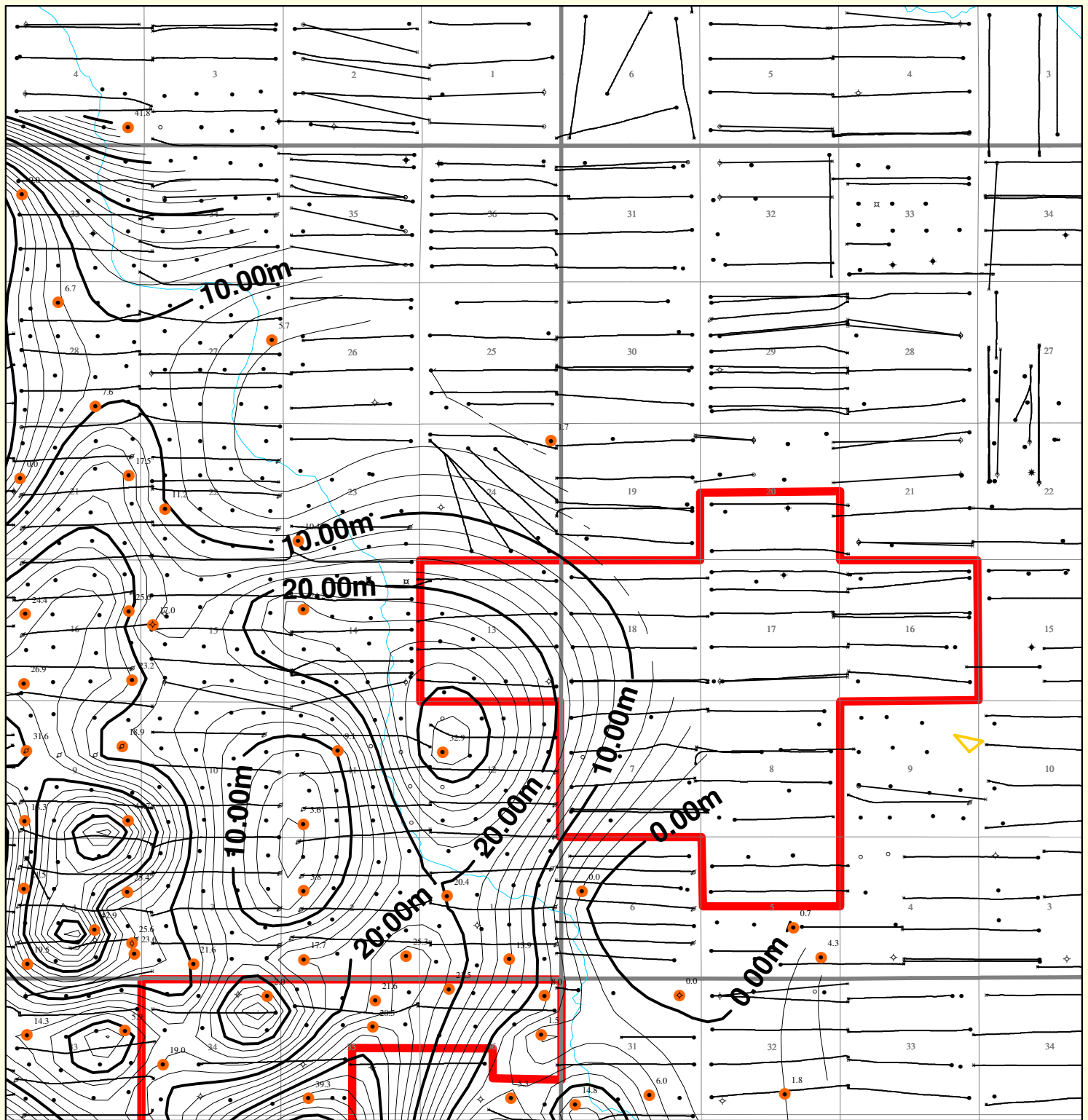
Appendix 13

Middle k*h (0.5 md cutoff)

Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 Copyright © 1991-2013	Author: Neely Date: November 25, 2013 File: Sinclair Unit MBKKN k-h.MAP Scale: 1 : 65000 Projection: Stereographic Center: N49.66315 W101.28391 DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107
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(Core Data MBKKN.wls) MBKKN k-h .5md(U
Contour interval = 1m





WELL LEGEND	
Bottom Hole Locations:	
○ Location	◊ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
☼ Lyle UA k-h 1 md(U-TVD)	

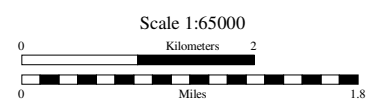
WELL LISTS	
* All Wells	
● Upper Lyleton A Core Data	

Tundra

Appendix 14

Lyleton Upper A k*h

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646</p> <p><small>Copyright © 1991-2013</small></p> <p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>Author: Neely Date: November 25, 2013 File: Sinclair Unit Lyleton A Upper Scale: 1 : 65000 Projection: Stereographic Center: N49.6652° W101.28380</p> <p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107</p>
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R29

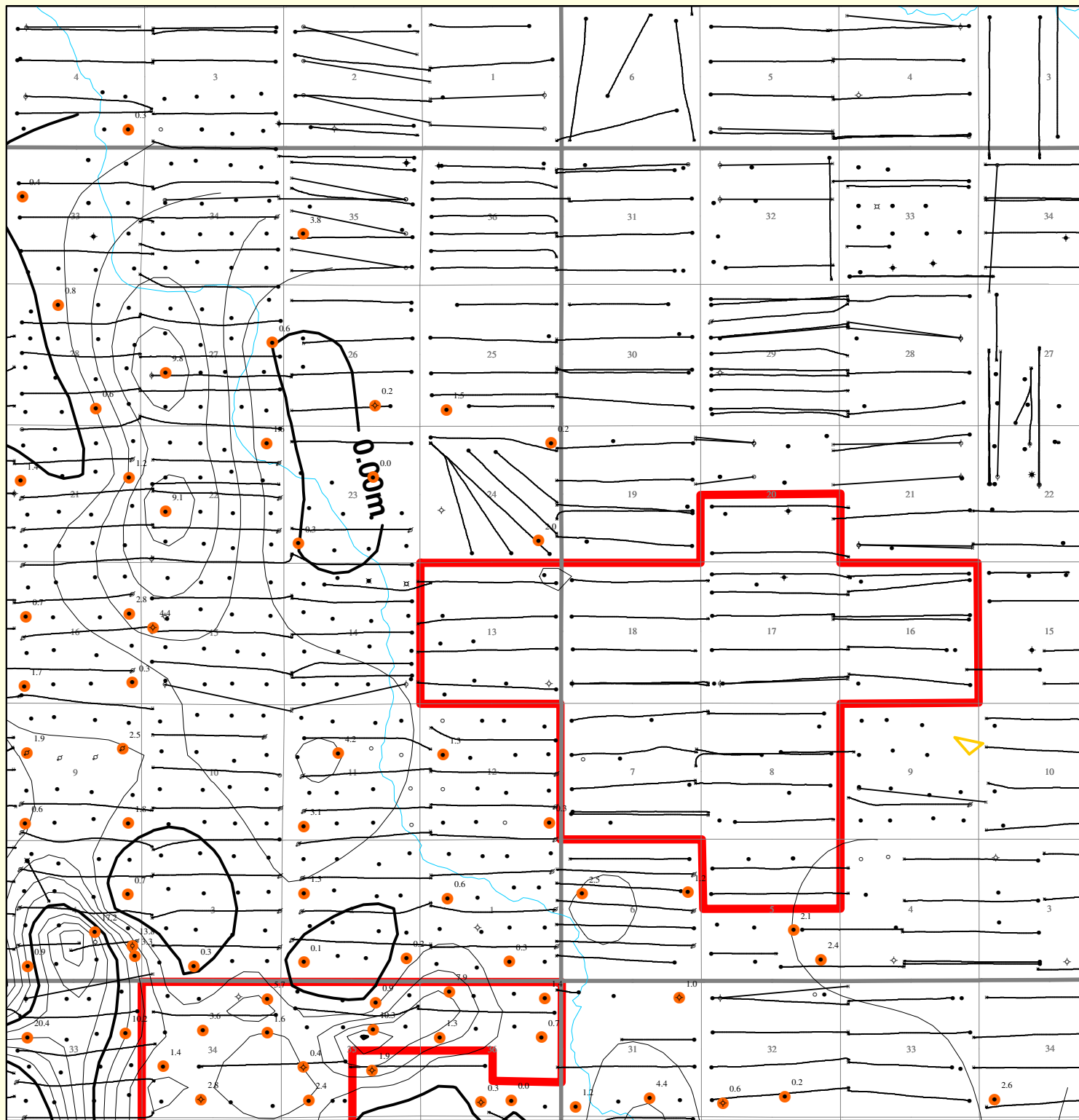
R28W1

T9

T9

T8

T8



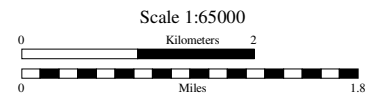
R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
—◇ Directional	—□ Horizontal
Well Postings:	
* Lyle LA k-h .5md(U-TVD)	

WELL LISTS	
* All Wells	
● Lower Lyleton A Core Data	

<h1>Tundra</h1>	
<h2>Appendix 15</h2> <h3>Lyleton Lower A k*h</h3>	
Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 <small>Copyright © 1991-2013</small>	Author: Neely Date: November 25, 2013 File: Sinclair Unit Lyleton A Lower Scale: 1 : 65000 Projection: Stereographic Center: N49.66548 W101.28374
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107



R29

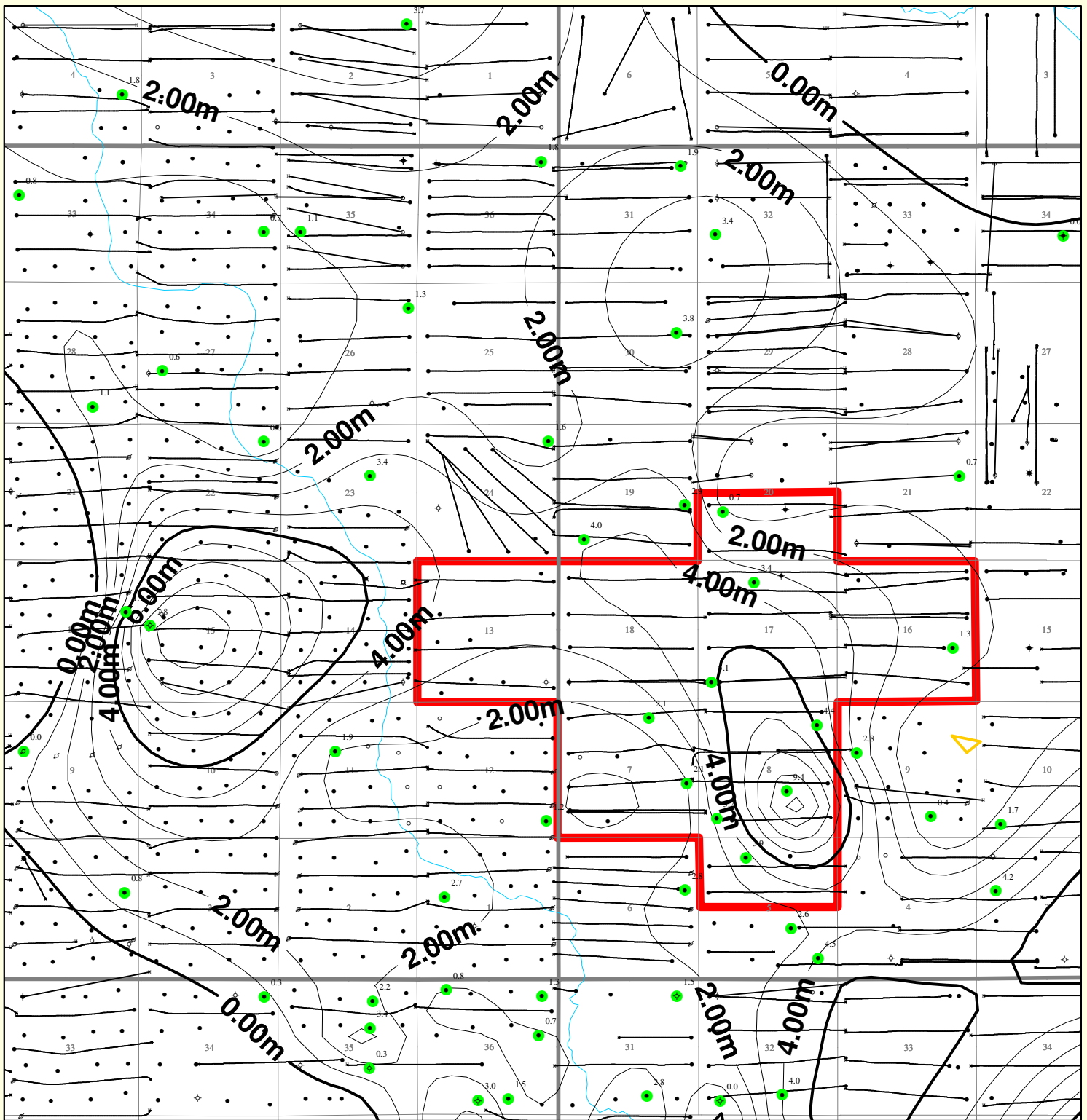
R28W1

T9

T9

T8

T8



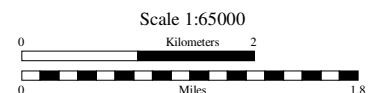
R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
—○ Directional	— Horizontal
Well Postings:	
	⊛ Lyle B k-h .5md(U-TVD)

WELL LISTS	
*	All Wells
●	Lyleton B Core Data

<h2>Tundra</h2>	
<h3>Appendix 16</h3> <h4>Lyleton B k-h (0.5 md c/o)</h4>	
Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646 <small>Copyright © 1991-2013</small>	Author: Neely Date: November 25, 2013 File: Sinclair Unit Lyleton B k-h.MA Scale: 1 : 65000 Projection: Stereographic Center: N49.66529 W101.28357 DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	



(Core Data Lyleton B.wls) Lyle B k-h .5md(U-Contour interval = 1m

R29

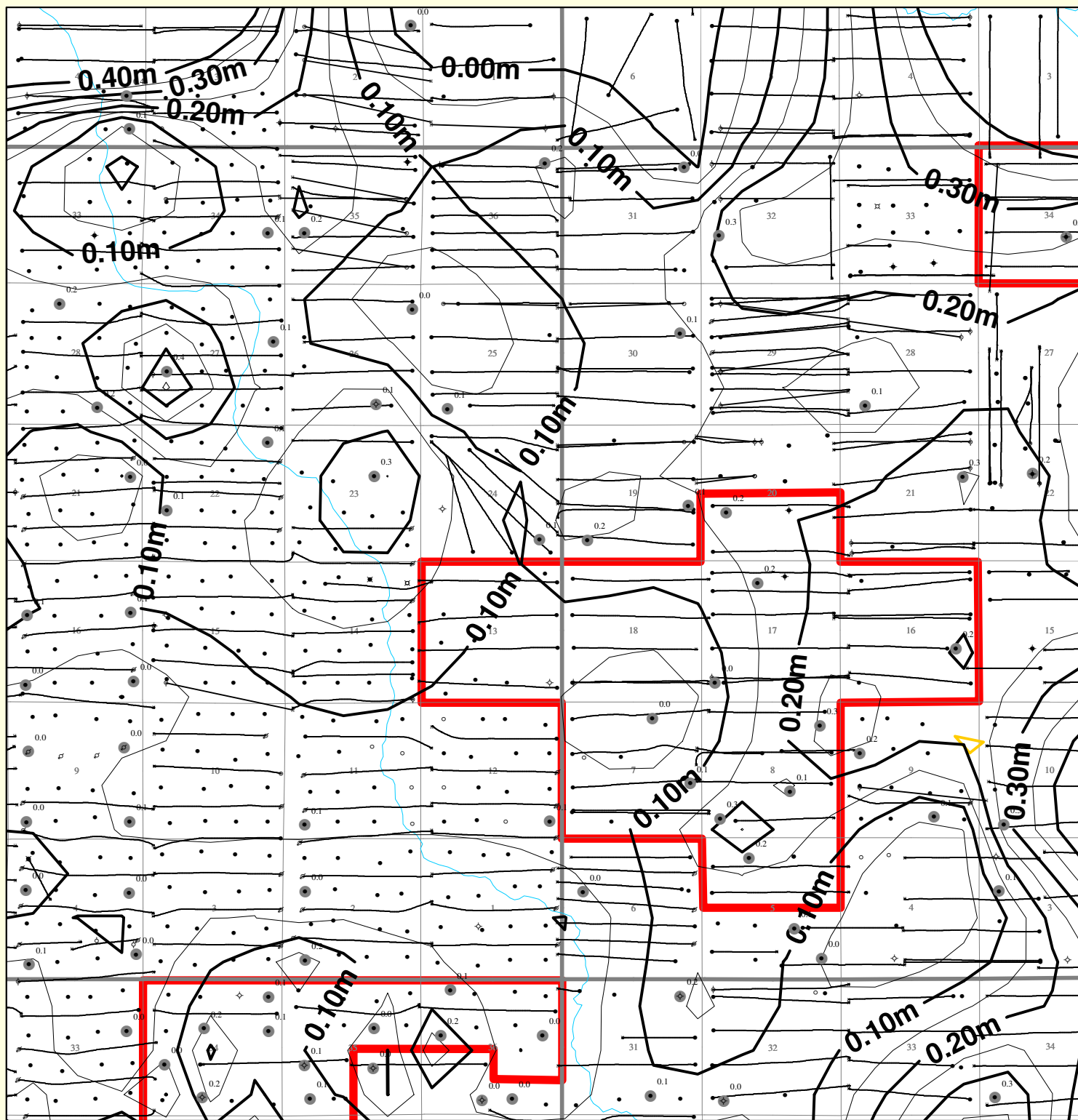
R28W1

T9

T9

T8

T8



R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
◇ Dry & Abandoned	◆ Abandoned Oil
□ Injection	
Surface Hole Locations:	
—○ Directional	—□ Horizontal
Well Postings:	
* MBKKN phi-h .5md(U-T)	

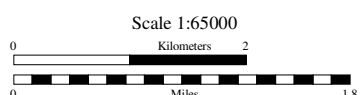
WELL LISTS
* All Wells
● MBKKN Core Data

Tundra

Appendix 17

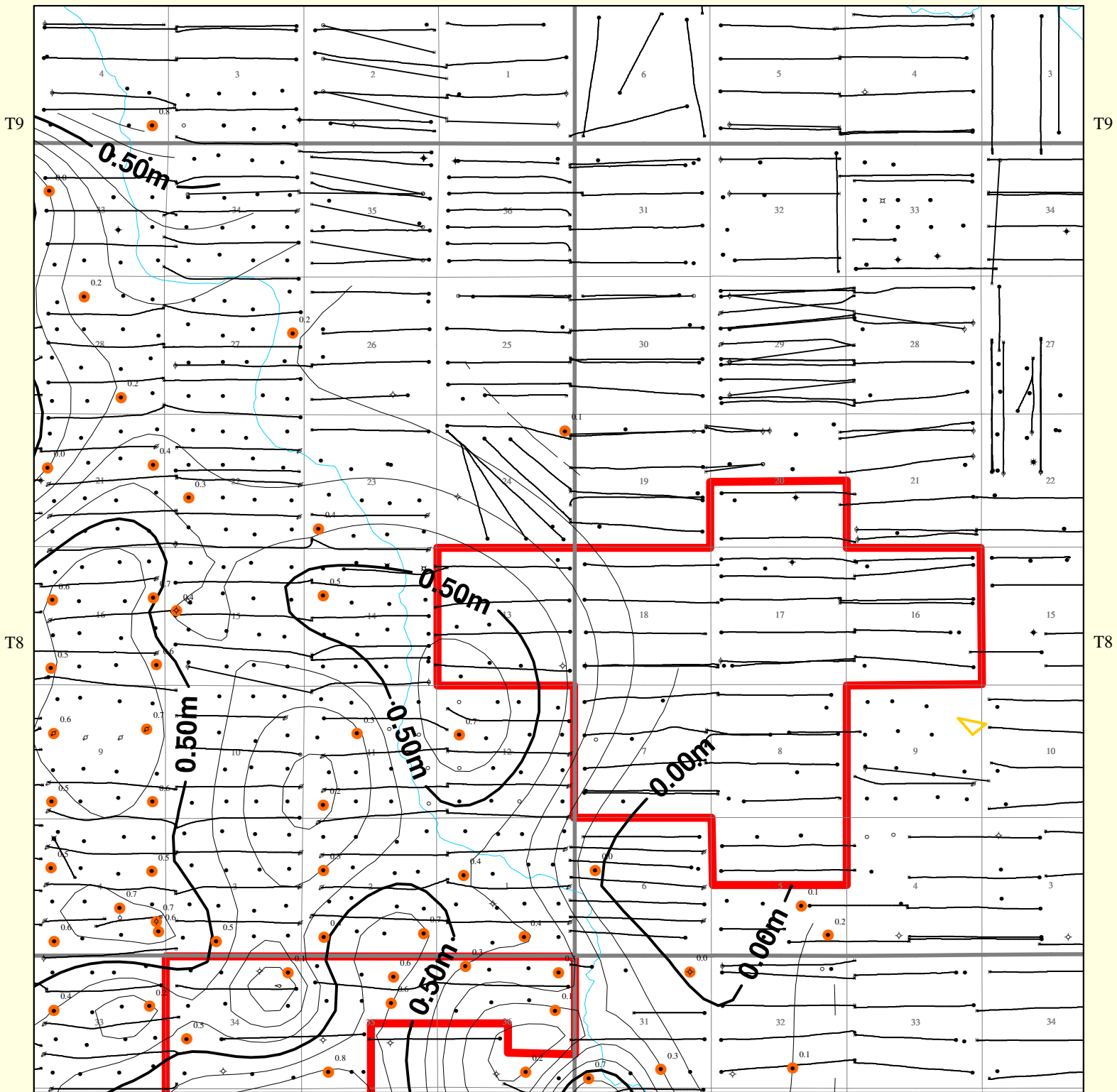
MBKKN phi*h (0.5 md cutoff)

Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 24 No. 01, Jan 16 2014 (403) 770-4646 <small>Copyright © 1991-2014</small>	Author: Neely Date: February 10, 2014 File: Sinclair Unit MBKKN phi-h.MAP Scale: 1 : 65000 Projection: Stereographic Center: N49.66529 W101.28396	DLS Version Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107
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R29

R28W1



R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
* Lyle UA phi-h 1 md(U-TV)	

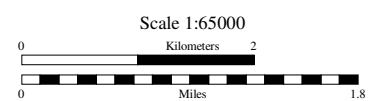
WELL LISTS	
*	All Wells
●	Upper Lyleton A Core Data

Tundra

Appendix 18

Lyleton Upper A phi*h

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 24 No. 01, Jan 16 2014 (403) 770-4646</p>	<p>Author: Neely Date: February 10, 2014 File: Sinclair Unit Lyleton A Upper Scale: 1 : 65000 Projection: Stereographic Center: N49.66539 W101.28367</p>
<p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107</p>



R29

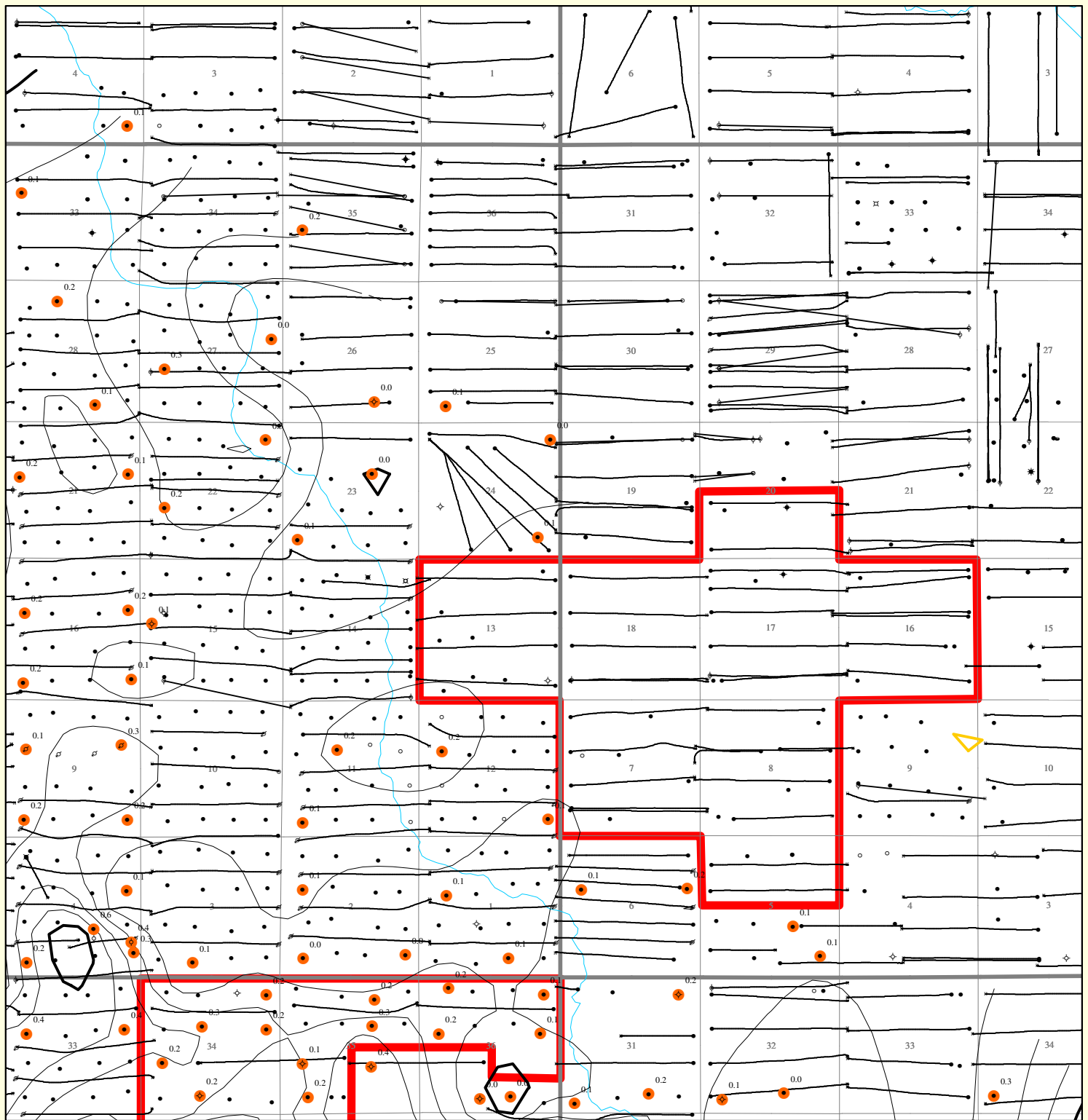
R28W1

T9

T9

T8

T8



R29

R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
→ Directional	— Horizontal
Well Postings:	
* Lyle LA phi-h .5md(U-TV)	

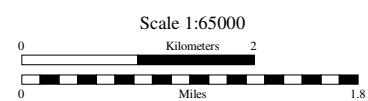
WELL LISTS	
* All Wells	
● Lower Lyleton A Core Data	

Tundra

Appendix 19

Lyleton Lower A phi*h

<p>Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 24 No. 01, Jan 16 2014 (403) 770-4646</p> <p>Copyright © 1991-2014</p> <p>Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid</p>	<p>Author: Neely Date: February 10, 2014 File: Sinclair Unit Lyleton A Lower Scale: 1 : 65000 Projection: Stereographic Center: N49.66511 W101.28368</p> <p>DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107</p>	
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R29

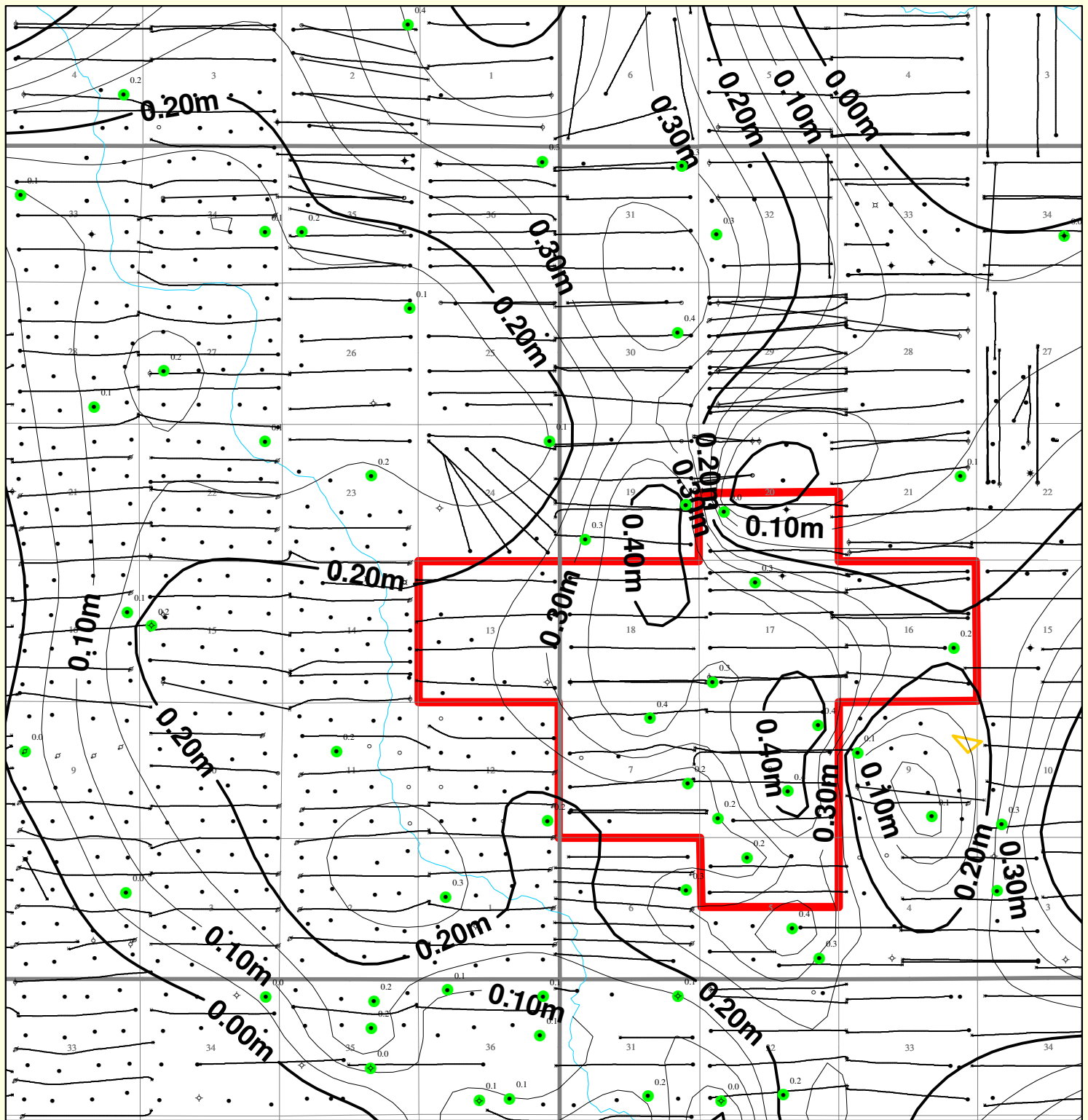
R28W1

T9

T9

T8

T8



R29

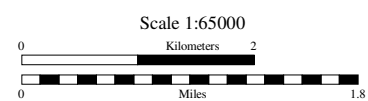
R28W1

WELL LEGEND	
Bottom Hole Locations:	
○ Location	◇ Suspended
⊗ Service or Drain	● Oil
⊕ Dry & Abandoned	◆ Abandoned Oil
⊖ Injection	
Surface Hole Locations:	
—○ Directional	—□ Horizontal
Well Postings:	
	⊛ Lyle B phi-h .5md(U-TVD)

WELL LISTS	
*	All Wells
●	Lyleton B Core Data

<h1>Tundra</h1>	
<h2>Appendix 20</h2>	
<h3>Lyleton B phi-h (0.5 md c/o)</h3>	
Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 24 No. 01, Jan 16 2014 (403) 770-4646 <small>Copyright © 1991-2014</small>	Author: Neely Date: February 10, 2014 File: Sinclair Unit Lyleton B phi-h. Scale: 1 : 65000 Projection: Stereographic Center: N49.66529 W101.28357 DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: MF107
Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	

(Core Data Lyleton B.wls) Lyle B phi-h .5md(U)
 Contour interval = 0.05m



R31

R30

R29

R28

R27

T12

T12

T11

T11

T10

T10

T9

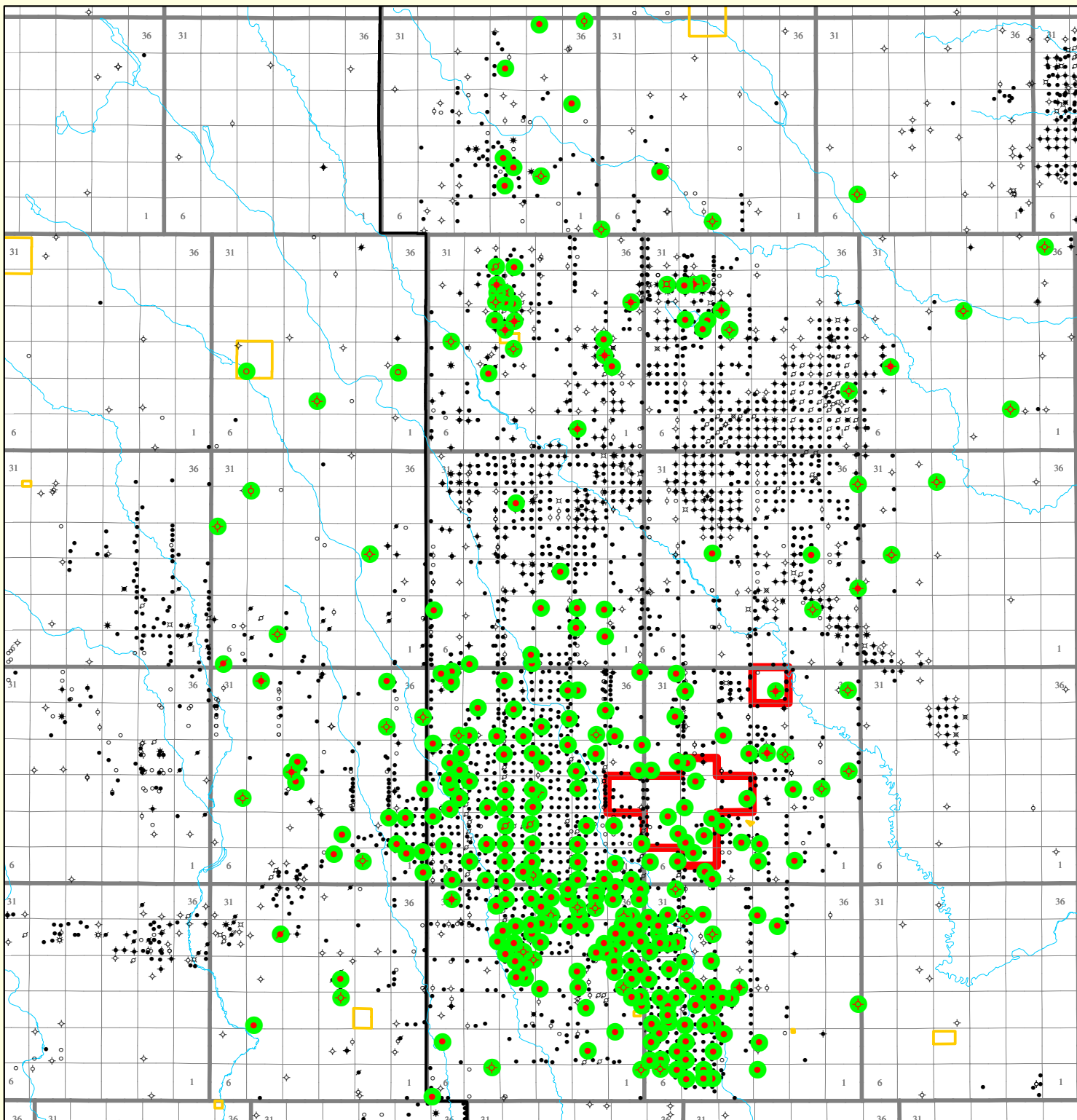
T9

T8

T8

T7

T7



R32 R31 R30 R29 R28 R27W1

WELL LEGEND


- Bottom Hole Locations:
- Location
 - ⊠ Service or Drain
 - ⊞ Dry & Abandoned
 - ⊞ Abandoned Oil
 - ⊞ Injection
 - ◇ Suspended
 - Oil
 - ⊞ Suspended Oil
 - ⊞ Abandoned Service

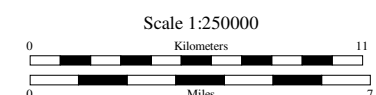
WELL LISTS

- * All Wells
- Core Any Data

Tundra

**Appendix 21
Core Data Coverage**

 Copyright © 1991-2013	Created in AccuMap™ Product of IHS Datum: NAD27 Vol. 23 No. 10, Oct 21 2013 (403) 770-4646	Author: Neely Date: November 25, 2013 File: Sinclair Unit Core Coverage.MA Scale: 1 : 250000 Projection: Stereographic Center: N49.75213 W101.34494
	Grid Information: DLS: IHS Enhanced Grid NTS: Theoretical Grid FPS: Theoretical Grid US: IHS US Grid	DLS Version Information: AB: ATS 2.6 BC: PRB 2.0 SK: STS 2.5 MB: ML107



Scale 1:250000

DSTs and IPs

of Tests: 1

Test 1: 1001.5 m - 1007.0 m

Date:	2/17/2005
Formation:	BAKKEN , UNDEF
Type:	INFLATE STRADDLE
Valve Open:	10 / 59 min
Shut-in:	59 / 120 min
Flow Pres:	4455 / 4626 / 3301 / 6378 kPa
Shut-in Pres:	9700 / 9445 kPa
Hydro Pres:	10849 / 10792 kPa
Comments:	RECOVERY: 76M (249FT) OIL CUT MUD BHTEMP: 29C;

Pressure Survey Report

Tundra Oil and Gas Ltd.
TUNDRA SINCLAIR HZNTL(9-7)
9-7/11-8-8-28W1
Licence No. : 6286
March 21 - 27, 2007

Survey by:



Report
prepared by:



Phone: (403) 720-3444



Survey Information:

Company Name	Tundra Oil and Gas Ltd.
Address	Virten, MB
Well Name	Tundra Sinclair HZNTL(9-7)
Location	9-7/11-8-8-28W1
Producing Zone	Bakken
Status	Oil Well
Test Type	Bottom Hole Build-up, Static Gradient
Open Hole	1047.0 – 1614.0 mKB (926.3 – 930.3 mTVD)
MPP	1330.5 mKB (928.3 mTVD)
Pressure @ MPP	9,588 kPaA (Calculated) (See Comments)
Producing Through	73 mm Tubing
Tubing Depth	980.0 mKB
PBTD	Not Available
TD	1614.0 mKB
KB Elevation	506.97 m
CF Elevation	503.57 m
Tubing Pressure Before Survey	0 kPaG
Tubing Pressure After Survey	0 kPaG
Casing Pressure Before Survey	0 kPaG
Casing Pressure After Survey	0 kPaG
Survey Start Date yyyy/mm/dd	2007/03/21
Survey Finish Date yyyy/mm/dd	2007/03/27
Last Stable Temperature Recorded	18.9 ° C
Last Stable Pressure Recorded	4,115 kPaA
Surface Temperature	0 ° C

	Top Gauge	Bottom Gauge
Serial Number	36006	36005
Calibration Date	2006/09/28	2006/09/26
Pressure Range	20.8 MPa	20.8 MPa
Survey Set Depth	401.3 mKB	402.0 mKB

kPaG to kPaA Conversion Factor	93 kPa
Wireline Work By	B. Royan, Quality Wireline, Estevan, 306-634-7975
Report Prepared By	Vida Farahani, RTM, Calgary, 403-720-3444
Gauges Manufactured By	Spartek Systems, Sylvan Lake, 403-887-2443

Sequence of Events
Tundra Oil and Gas Ltd.
Tundra Sinclair HZNTL(9-7)
9-7/11-8-8-28W1

Date yyyy/mm/dd	Time hh:mm	Event
2007/03/21	01:50	Batteries connected to gauges 36005 and 36006 for extended test
2007/03/21	02:29	Gauges on bottom @ 402 metres
2007/03/21	02:31	Build-up started
2007/03/27	11:40	Start to 980.5 metres (914.2 mTVD)
2007/03/27	12:43	Stop at 980.5 metres
2007/03/27	12:50	Top gauge SN 36006 quit
2007/03/27	12:51	Start to 884.5 metres (868.2 mTVD)
2007/03/27	12:59	Stop at 884.5 metres
2007/03/27	13:02	Start to 788.6 metres (787.8 mTVD)
2007/03/27	13:09	Stop at 788.6 metres
2007/03/27	13:12	Start to 692.7 metres
2007/03/27	13:18	Stop at 692.7 metres
2007/03/27	13:32	Start to 597 metres
2007/03/27	13:28	Stop at 597 metres
2007/03/27	13:32	Start to 501.1 metres
2007/03/27	13:39	Stop at 501.1 metres
2007/03/27	13:42	Start to 405.2 metres
2007/03/27	13:49	Stop at 405.2 metres
2007/03/27	13:52	Start to 309.3 metres
2007/03/27	13:59	Stop at 309.3 metres

Sequence of Events
Tundra Oil and Gas Ltd.
Tundra Sinclair HZNTL(9-7)
9-7/11-8-8-28W1

Date yyyy/mm/dd	Time hh:mm	Event
2007/03/27	14:01	Start to 214.1 metres
2007/03/27	14:09	Stop at 214.1 metres
2007/03/27	14:12	Start to 118.6 metres
2007/03/27	14:18	Stop at 118.6 metres
2007/03/27	14:22	Start to 2 metres
2007/03/27	14:26	Stop at 2 metres

Comments:

A gradient value of 10.4 was calculated based on the static gradient which was then applied to the last stable pressure at the end of the build up to calculate pressure at MPP.

Comments:

Gradient stops were made by the service rig as they were pulling the tubing to surface with the bridge plug and recorders.

Unless otherwise specified:

Pressures are presented in absolute. Depths are measured from KB. Fluid level @ approximately 55 metres.



Wireline work by Quality Wireline, Estevan, Saskatchewan



Reports prepared by RTM Inc., Calgary, Alberta



Gauges manufactured by Spartek Systems, Sylvan Lake, Alberta

RTM Inc.
Calgary, Alberta

Build-up Data



Tundra Oil & Gas Ltd.
 9-7/11-8-8-28W1
 Start Test Date: 2007/03/21
 Final Test Date: 2007/03/27

Tundra Sinclair HZNTL(9-7)
 Formation: Bakken

	Date	Clk Time	Delta Time	Bottom Gauge Pres.	Bottom Gauge Temp.	Top Gauge Pres.	Top Gauge Temp.	Diff. G1 - G2
	yyyy/mm/dd	hh:mm:ss	hr	kPa(a)	°C	kPa(a)	°C	kPa
1	2007/03/21	01:50:00	0.0000	94.41	6.13	93.50	5.44	
2	2007/03/21	03:15:00	1.4167	4116.23	27.40	4126.18	27.04	-6.29
3	2007/03/21	04:40:00	2.8333	4155.69	26.89	4163.22	26.56	-6.63
4	2007/03/21	06:05:00	4.2500	4167.73	26.45	4174.99	26.08	-6.84
5	2007/03/21	07:30:00	5.6667	4174.43	26.03	4181.61	25.65	-6.93
6	2007/03/21	08:55:00	7.0833	4179.39	25.67	4186.43	25.27	-6.88
7	2007/03/21	10:20:00	8.5000	4181.49	25.33	4188.09	24.94	-6.69
8	2007/03/21	11:45:00	9.9167	4177.99	25.03	4184.55	24.63	-6.76
9	2007/03/21	13:10:00	11.3333	4174.95	24.75	4181.64	24.36	-6.78
10	2007/03/21	14:35:00	12.7500	4172.26	24.49	4178.98	24.10	-6.89
11	2007/03/21	16:00:00	14.1667	4169.49	24.24	4176.27	23.87	-6.96
12	2007/03/21	17:25:00	15.5833	4166.93	24.03	4173.66	23.65	-6.84
13	2007/03/21	18:50:00	17.0000	4164.56	23.83	4171.23	23.45	-6.79
14	2007/03/21	20:15:00	18.4167	4162.21	23.64	4168.83	23.26	-6.73
15	2007/03/21	21:40:00	19.8333	4160.03	23.46	4166.65	23.08	-6.71
16	2007/03/21	23:05:00	21.2500	4157.98	23.29	4164.64	22.92	-6.71
17	2007/03/22	00:30:00	22.6667	4156.06	23.14	4162.72	22.76	-6.71
18	2007/03/22	01:55:00	24.0833	4154.41	22.99	4160.88	22.62	-6.58
19	2007/03/22	03:20:00	25.5000	4152.72	22.85	4159.20	22.48	-6.54
20	2007/03/22	04:45:00	26.9167	4151.12	22.71	4157.69	22.35	-6.60
21	2007/03/22	06:10:00	28.3333	4149.66	22.58	4156.23	22.23	-6.71
22	2007/03/22	07:35:00	29.7500	4148.27	22.46	4154.93	22.11	-6.69
23	2007/03/22	09:00:00	31.1667	4146.89	22.35	4153.64	22.00	-6.80
24	2007/03/22	10:25:00	32.5833	4145.72	22.25	4152.44	21.89	-6.79
25	2007/03/22	11:50:00	34.0000	4144.45	22.14	4151.20	21.79	-6.84
26	2007/03/22	13:15:00	35.4167	4143.21	22.04	4150.01	21.69	-6.87
27	2007/03/22	14:40:00	36.8333	4142.08	21.95	4148.96	21.60	-6.93
28	2007/03/22	16:05:00	38.2500	4141.05	21.86	4147.94	21.51	-6.97
29	2007/03/22	17:30:00	39.6667	4140.14	21.77	4147.04	21.42	-6.93
30	2007/03/22	18:55:00	41.0833	4139.24	21.68	4146.24	21.34	-7.03
31	2007/03/22	20:20:00	42.5000	4138.50	21.60	4145.48	21.26	-7.00
32	2007/03/22	21:45:00	43.9167	4137.86	21.52	4144.78	21.19	-7.00
33	2007/03/22	23:10:00	45.3333	4137.21	21.45	4144.16	21.11	-6.98
34	2007/03/23	00:35:00	46.7500	4136.55	21.37	4143.55	21.04	-7.07
35	2007/03/23	02:00:00	48.1667	4135.99	21.31	4143.01	20.97	-7.01
36	2007/03/23	03:25:00	49.5833	4135.32	21.24	4142.35	20.90	-7.09
37	2007/03/23	04:50:00	51.0000	4134.65	21.17	4141.68	20.84	-7.07
38	2007/03/23	06:15:00	52.4167	4134.01	21.11	4141.07	20.78	-7.05
39	2007/03/23	07:40:00	53.8333	4133.30	21.05	4140.35	20.71	-7.10

Bottom Gauge Serial Number: 36005 Start Date: 2007/03/21 01:50:00 Run Depth: 402.00
 Top Gauge Serial Number: 36006 Start Date: 2007/03/21 01:50:00 Run Depth: 401.30
 Print Filter: Print every 170th point



Tundra Oil & Gas Ltd.
 9-7/11-8-8-28W1
 Start Test Date: 2007/03/21
 Final Test Date: 2007/03/27

Tundra Sinclair HZNTL(9-7)
 Formation: Bakken

	Date	Clk Time	Delta Time	Bottom Gauge Pres.	Bottom Gauge Temp.	Top Gauge Pres.	Top Gauge Temp.	Diff. G1 - G2
	yyyy/mm/dd	hh:mm:ss	hr	kPa(a)	°C	kPa(a)	°C	kPa
40	2007/03/23	09:05:00	55.2500	4132.66	20.99	4139.74	20.65	-7.09
41	2007/03/23	10:30:00	56.6667	4132.23	20.93	4139.10	20.60	-6.90
42	2007/03/23	11:55:00	58.0833	4131.64	20.87	4138.54	20.54	-6.92
43	2007/03/23	13:20:00	59.5000	4131.02	20.82	4137.90	20.49	-6.92
44	2007/03/23	14:45:00	60.9167	4130.41	20.76	4137.37	20.44	-6.93
45	2007/03/23	16:10:00	62.3333	4130.04	20.71	4136.81	20.39	-6.73
46	2007/03/23	17:35:00	63.7500	4129.54	20.66	4136.35	20.34	-6.84
47	2007/03/23	19:00:00	65.1667	4129.18	20.61	4135.91	20.29	-6.72
48	2007/03/23	20:25:00	66.5833	4128.74	20.57	4135.52	20.24	-6.79
49	2007/03/23	21:50:00	68.0000	4128.35	20.52	4135.11	20.19	-6.84
50	2007/03/23	23:15:00	69.4167	4127.94	20.48	4134.71	20.15	-6.84
51	2007/03/24	00:40:00	70.8333	4127.52	20.43	4134.32	20.10	-6.80
52	2007/03/24	02:05:00	72.2500	4127.10	20.39	4133.92	20.06	-6.84
53	2007/03/24	03:30:00	73.6667	4126.70	20.35	4133.51	20.02	-6.82
54	2007/03/24	04:55:00	75.0833	4126.63	20.30	4133.10	19.98	-6.49
55	2007/03/24	06:20:00	76.5000	4126.24	20.26	4132.75	19.94	-6.45
56	2007/03/24	07:45:00	77.9167	4125.76	20.22	4132.31	19.90	-6.58
57	2007/03/24	09:10:00	79.3333	4125.35	20.18	4131.88	19.86	-6.55
58	2007/03/24	10:35:00	80.7500	4124.96	20.14	4131.50	19.82	-6.56
59	2007/03/24	12:00:00	82.1667	4124.55	20.11	4131.07	19.79	-6.51
60	2007/03/24	13:25:00	83.5833	4124.06	20.07	4130.63	19.75	-6.60
61	2007/03/24	14:50:00	85.0000	4123.64	20.04	4130.21	19.72	-6.56
62	2007/03/24	16:15:00	86.4167	4123.33	20.00	4129.82	19.68	-6.53
63	2007/03/24	17:40:00	87.8333	4123.05	19.97	4129.52	19.65	-6.49
64	2007/03/24	19:05:00	89.2500	4122.74	19.94	4129.29	19.62	-6.51
65	2007/03/24	20:30:00	90.6667	4122.46	19.91	4128.99	19.59	-6.58
66	2007/03/24	21:55:00	92.0833	4122.22	19.88	4128.77	19.55	-6.57
67	2007/03/24	23:20:00	93.5000	4121.94	19.85	4128.50	19.52	-6.58
68	2007/03/25	00:45:00	94.9167	4121.67	19.81	4128.26	19.49	-6.58
69	2007/03/25	02:10:00	96.3333	4121.39	19.78	4127.92	19.46	-6.56
70	2007/03/25	03:35:00	97.7500	4121.14	19.76	4127.74	19.44	-6.56
71	2007/03/25	05:00:00	99.1667	4120.79	19.73	4127.40	19.41	-6.59
72	2007/03/25	06:25:00	100.5833	4120.58	19.70	4127.15	19.38	-6.56
73	2007/03/25	07:50:00	102.0000	4120.34	19.67	4126.94	19.35	-6.60
74	2007/03/25	09:15:00	103.4167	4120.05	19.65	4126.66	19.33	-6.63
75	2007/03/25	10:40:00	104.8333	4119.75	19.62	4126.37	19.30	-6.66
76	2007/03/25	12:05:00	106.2500	4119.49	19.59	4126.12	19.27	-6.64
77	2007/03/25	13:30:00	107.6667	4119.19	19.57	4125.87	19.25	-6.69
78	2007/03/25	14:55:00	109.0833	4118.88	19.55	4125.56	19.22	-6.72

Bottom Gauge Serial Number: 36005 Start Date: 2007/03/21 01:50:00 Run Depth: 402.00
 Top Gauge Serial Number: 36006 Start Date: 2007/03/21 01:50:00 Run Depth: 401.30
 Print Filter: Print every 170th point



Tundra Oil & Gas Ltd.
 9-7/11-8-8-28W1
 Start Test Date: 2007/03/21
 Final Test Date: 2007/03/27

Tundra Sinclair HZNTL(9-7)
 Formation: Bakken

	Date	Clk Time	Delta Time	Bottom Gauge Pres.	Bottom Gauge Temp.	Top Gauge Pres.	Top Gauge Temp.	Diff. G1 - G2
	yyyy/mm/dd	hh:mm:ss	hr	kPa(a)	°C	kPa(a)	°C	kPa
79	2007/03/25	16:20:00	110.5000	4118.61	19.52	4125.26	19.20	-6.70
80	2007/03/25	17:45:00	111.9167	4118.37	19.50	4125.04	19.18	-6.64
81	2007/03/25	19:10:00	113.3333	4118.18	19.47	4124.81	19.15	-6.70
82	2007/03/25	20:35:00	114.7500	4118.04	19.45	4124.72	19.13	-6.67
83	2007/03/25	22:00:00	116.1667	4117.94	19.43	4124.55	19.11	-6.63
84	2007/03/25	23:25:00	117.5833	4117.78	19.41	4124.45	19.09	-6.66
85	2007/03/26	00:50:00	119.0000	4117.64	19.38	4124.35	19.07	-6.67
86	2007/03/26	02:15:00	120.4167	4117.59	19.36	4124.27	19.04	-6.68
87	2007/03/26	03:40:00	121.8333	4117.51	19.35	4124.12	19.02	-6.64
88	2007/03/26	05:05:00	123.2500	4117.29	19.32	4124.00	19.00	-6.70
89	2007/03/26	06:30:00	124.6667	4117.22	19.30	4123.91	18.98	-6.65
90	2007/03/26	07:55:00	126.0833	4117.09	19.28	4123.77	18.96	-6.68
91	2007/03/26	09:20:00	127.5000	4116.92	19.26	4123.67	18.94	-6.71
92	2007/03/26	10:45:00	128.9167	4116.84	19.23	4123.46	18.92	-6.64
93	2007/03/26	12:10:00	130.3333	4116.69	19.22	4123.31	18.90	-6.60
94	2007/03/26	13:35:00	131.7500	4116.57	19.20	4123.19	18.88	-6.64
95	2007/03/26	15:00:00	133.1667	4116.38	19.18	4122.96	18.86	-6.62
96	2007/03/26	16:25:00	134.5833	4116.23	19.17	4122.79	18.84	-6.63
97	2007/03/26	17:50:00	136.0000	4115.96	19.14	4122.66	18.83	-6.69
98	2007/03/26	19:15:00	137.4167	4115.86	19.12	4122.53	18.81	-6.70
99	2007/03/26	20:40:00	138.8333	4115.72	19.11	4122.40	18.79	-6.65
100	2007/03/26	22:05:00	140.2500	4115.60	19.09	4122.26	18.77	-6.64
101	2007/03/26	23:30:00	141.6667	4115.53	19.06	4122.19	18.75	-6.70
102	2007/03/27	00:55:00	143.0833	4115.46	19.06	4122.08	18.74	-6.61
103	2007/03/27	02:20:00	144.5000	4115.36	19.04	4121.99	18.72	-6.61
104	2007/03/27	03:45:00	145.9167	4115.23	19.02	4121.85	18.71	-6.63
105	2007/03/27	05:10:00	147.3333	4115.16	19.01	4121.80	18.69	-6.63
106	2007/03/27	06:35:00	148.7500	4114.99	18.99	4121.66	18.67	-6.67
107	2007/03/27	08:00:00	150.1667	4114.85	18.97	4121.51	18.66	-6.64
108	2007/03/27	09:25:00	151.5833	4114.69	18.95	4121.37	18.64	-6.72
109	2007/03/27	10:50:00	153.0000	4114.93	18.94	4121.21	18.63	-6.27
110	2007/03/27	12:15:00	154.4167	7216.10	25.93	7774.17	27.26	10.49
111	2007/03/27	13:40:00	155.8333	4712.34	25.76			

Bottom Gauge Serial Number: 36005 Start Date: 2007/03/21 01:50:00 Run Depth: 402.00
 Top Gauge Serial Number: 36006 Start Date: 2007/03/21 01:50:00 Run Depth: 401.30
 Print Filter: Print every 170th point



Gradient Data



Static Gradient

Tundra Oil & Gas Ltd.
9-7/11-8-8-28W1

Tundra Sinclair HZNTL(9-7)
Formation: Bakken

Start Test Date: 2007/03/27
Final Test Date: 2007/03/27

Bottom Gauge

Gauge Serial Number	36005	Gauge Type	Sapphire
Gauge Manufacturer	Spartek	Maximum Recorder Range	20779.00 kPa
Run Depth	914.30 m	Date of Last Calibration	2006/09/28
Gauge Start Date	2007/03/27 12:43:00	Gauge Stop Date	2007/03/27 14:50:00
Date Gauge On Bottom	2007/03/21 02:29:00	Date Gauge Off Bottom	2007/03/27 12:51:00

Test Data

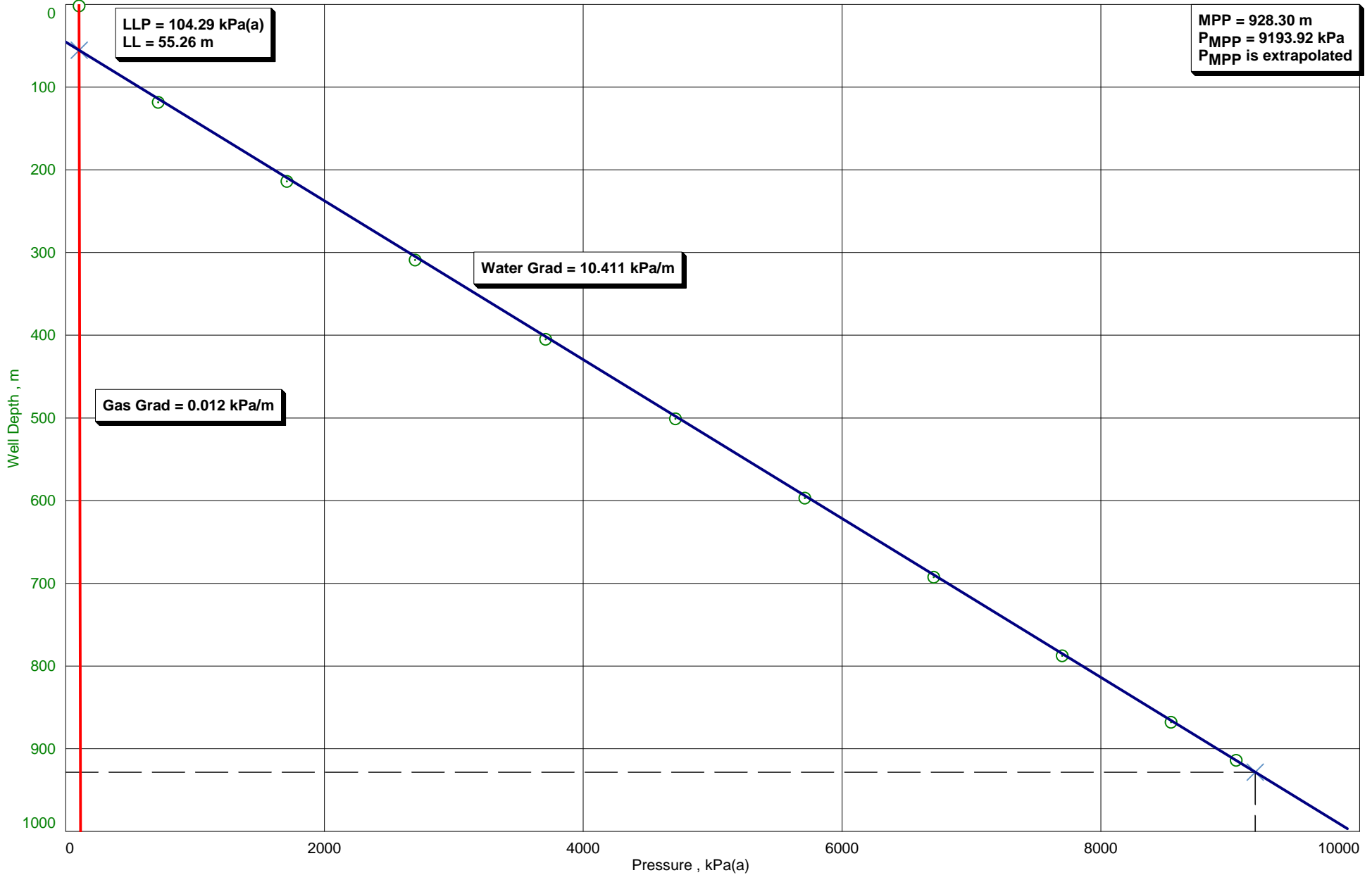
Test/Prod Interval Top KB (TVD)	926.30 m	Base KB (TVD)	930.30 m
Pool Datum Depth (SS)	m	Well Datum Depth	m
Tubing Pressure Initial	kPa(a) Final		kPa(a)
Casing Pressure Initial	kPa(a) Final		kPa(a)
Start Test Date	2007/03/27 12:43:00	Date Well Shut-In	2007/03/21 02:31:00

Depth m	Log Depth m	Time hh:mm:ss	Duration min	Pressure kPa(a)	Gradient kPa/m	Temp. °C	Gradient °C/m
914.28	980.50	12:51:00	8.00	9047.95		30.80	
868.23	884.50	13:01:30	10.50	8544.60	10.930	30.75	0.001
787.83	788.60	13:12:00	10.50	7701.75	10.483	29.98	0.010
692.66	692.70	13:22:00	10.00	6708.87	10.433	29.11	0.009
597.00	597.00	13:32:00	10.00	5713.03	10.410	27.70	0.015
501.10	501.10	13:42:00	10.00	4712.95	10.428	25.16	0.027
405.20	405.20	13:52:00	10.00	3709.57	10.463	22.30	0.030
309.26	309.26	14:01:00	9.00	2701.46	10.508	19.73	0.027
214.10	214.10	14:12:00	11.00	1710.59	10.413	16.09	0.038
118.60	118.60	14:22:00	10.00	715.94	10.415	13.39	0.028
2.00	2.00	14:29:30	7.50	103.67	5.251	11.53	0.016

Results

Gas	0.012 kPa/m	Gas - Water Interface	55.26 m	104.29 kPa(a)
Water	10.411 kPa/m	MPP	928.30 m	9193.92 kPa(a)

Pressure Gradient

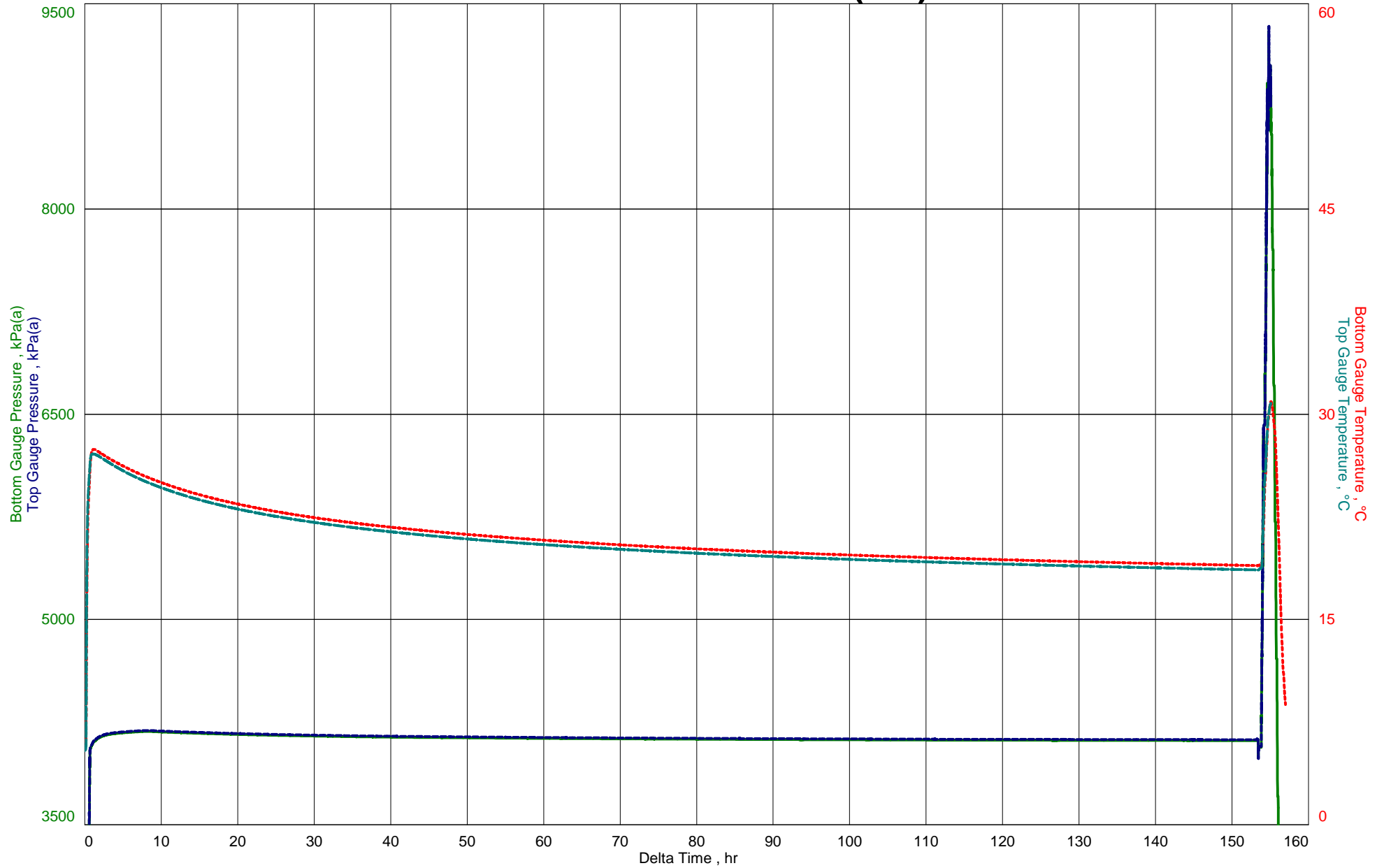


PRESSURE SURVEY REPORT

Plots



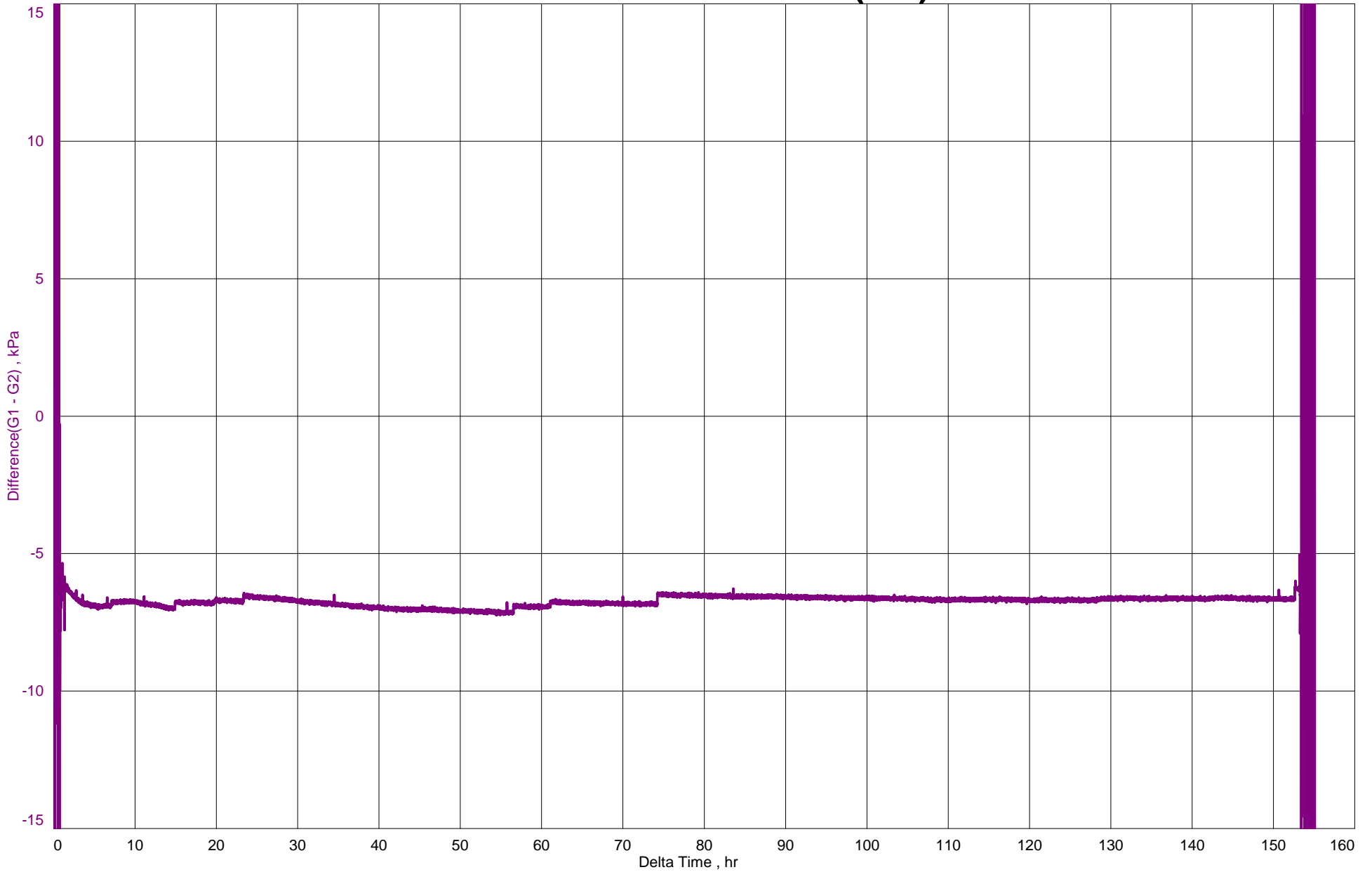
Tundra Sinclair HZNTL(9-7)



Tundra Oil & Gas Ltd.
9-7/11-8-8-28W1
Start Test Date: 2007/03/21
Final Test Date: 2007/03/27

Tundra Sinclair HZNTL(9-7)
Formation: Bakken

Tundra Sinclair HZNTL(9-7)



Tundra Sinclair HZNTL(9-7)

